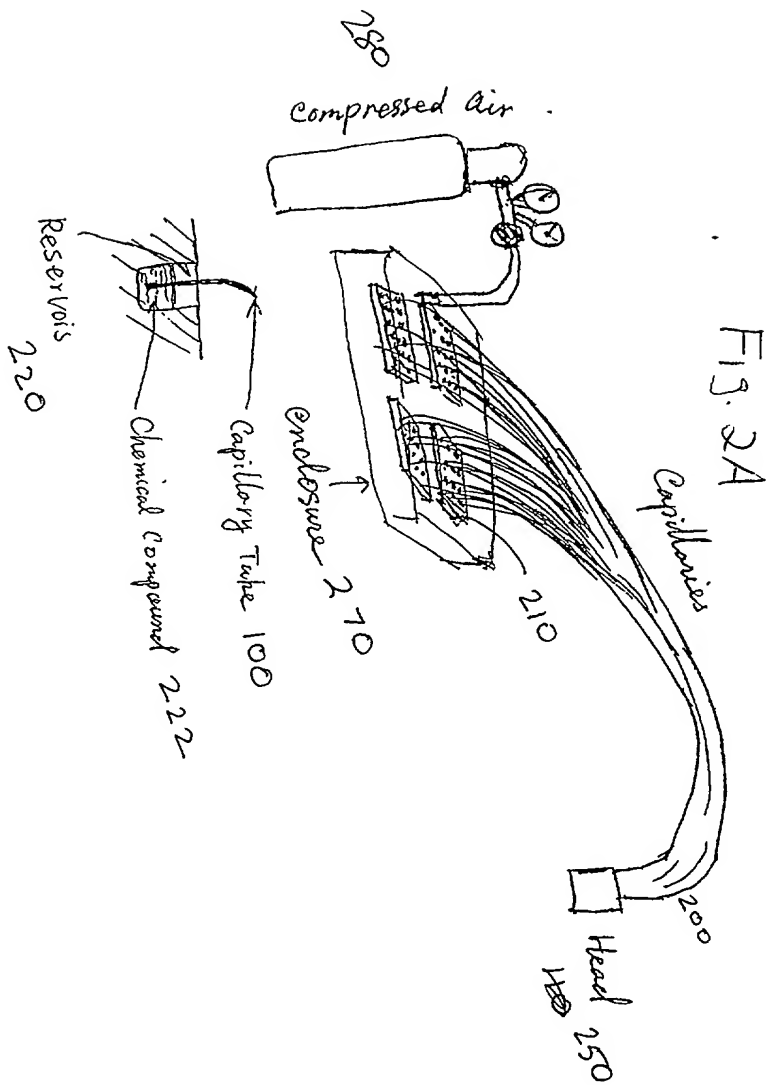


Figure 1

205T/CO/1120800T



10080274.071502

XHTS

-- Microarrays and Fiber Bundles

Imaging

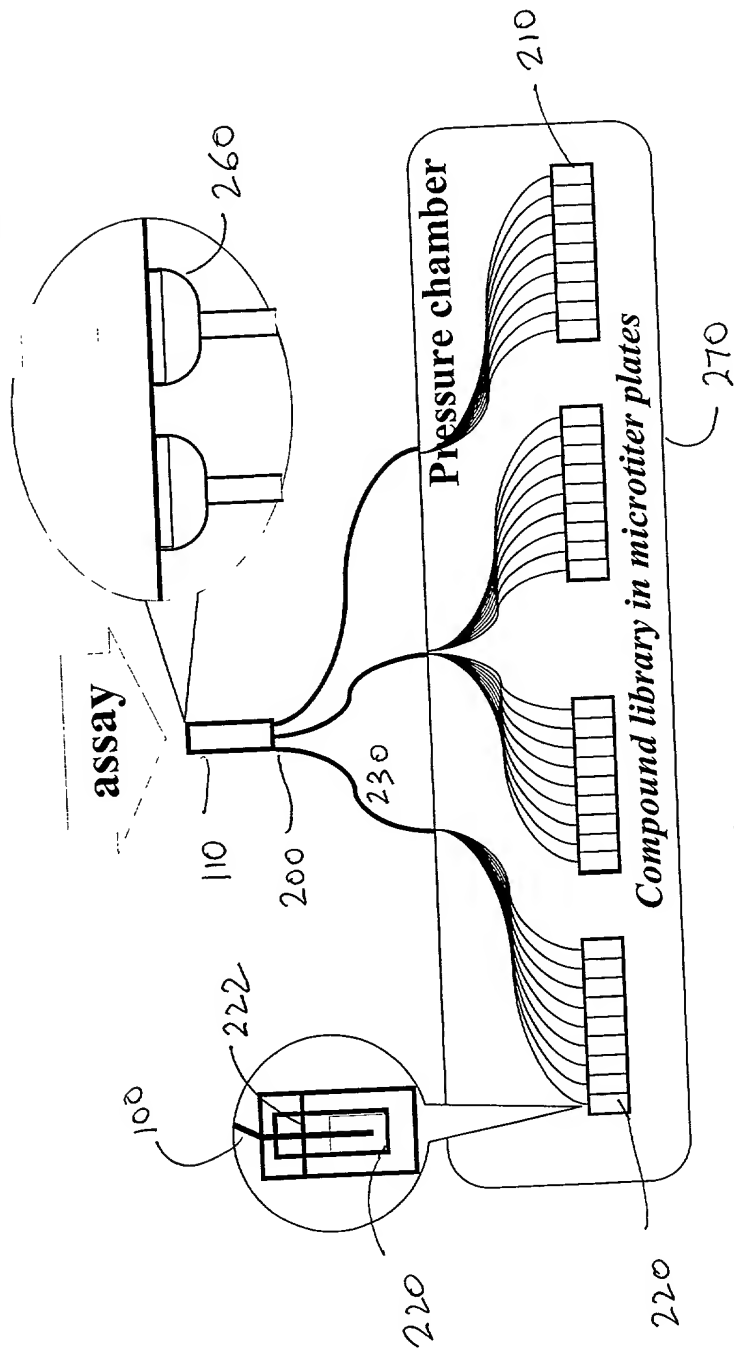


FIG. 2B

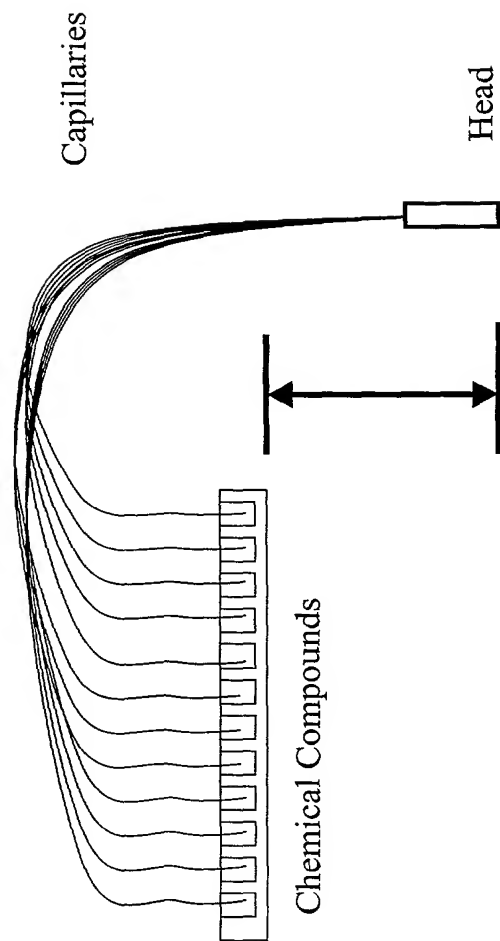


Figure 3

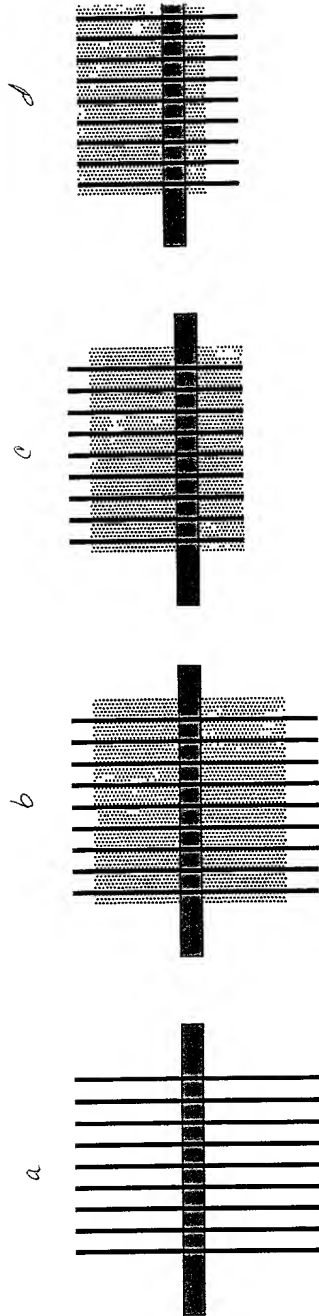


Fig. 4. Fabrication of delivery head using a guide plate

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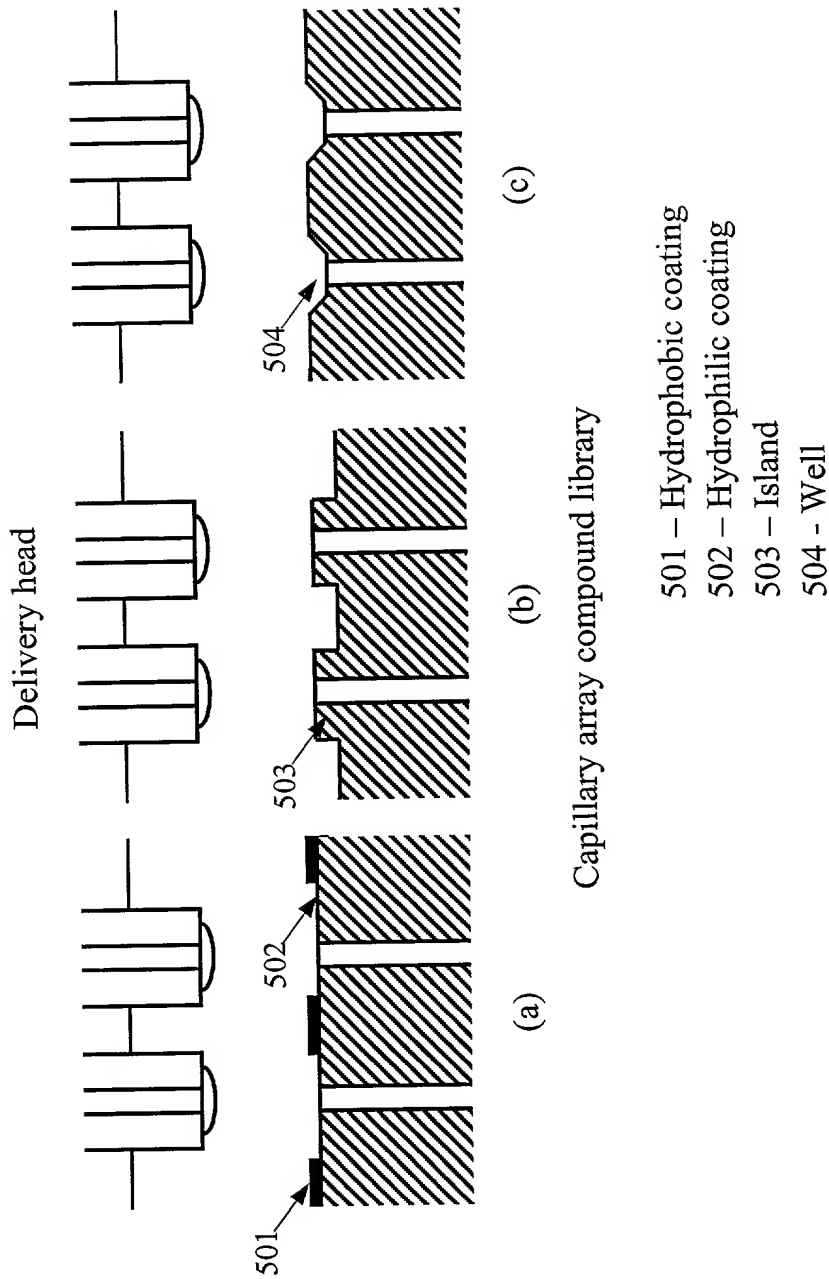


Fig. 5. Surface features on the surface of the capillary array compound library to prevent cross-contamination during compound loading

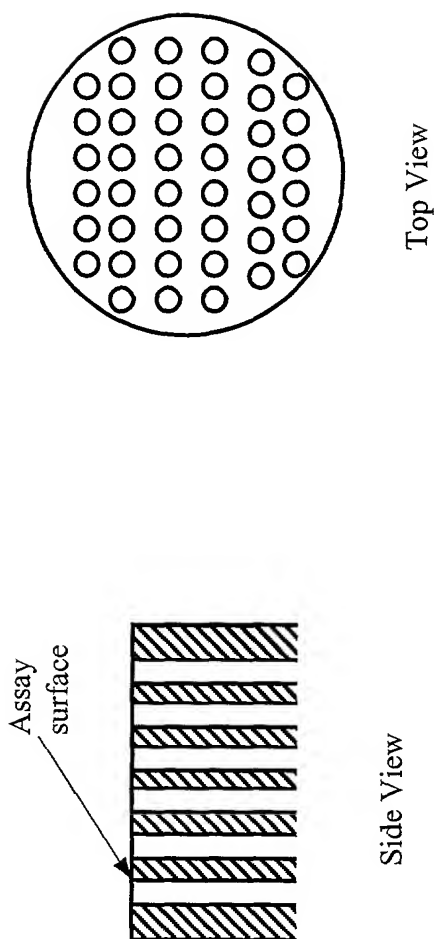


Fig. 6. Basic configuration of capillary array substrate for the portable compound library

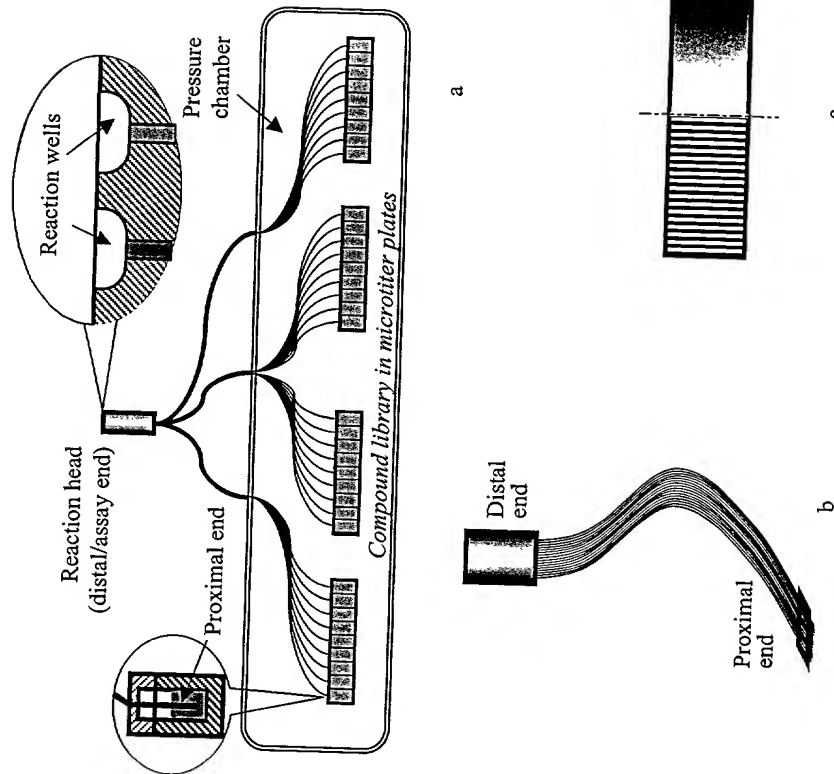
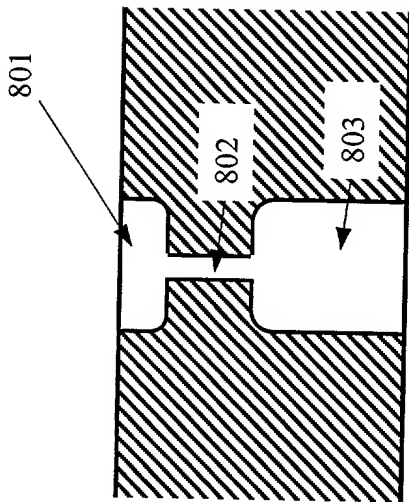


Fig. 7 The capillary array compound library in different formats



- 801 – Mixing/reaction well
- 802 – Flow regulator for reagent metering
- 803 – Compound reservoir

Fig. 8. Internal structure of a through hole in capillary array compound library

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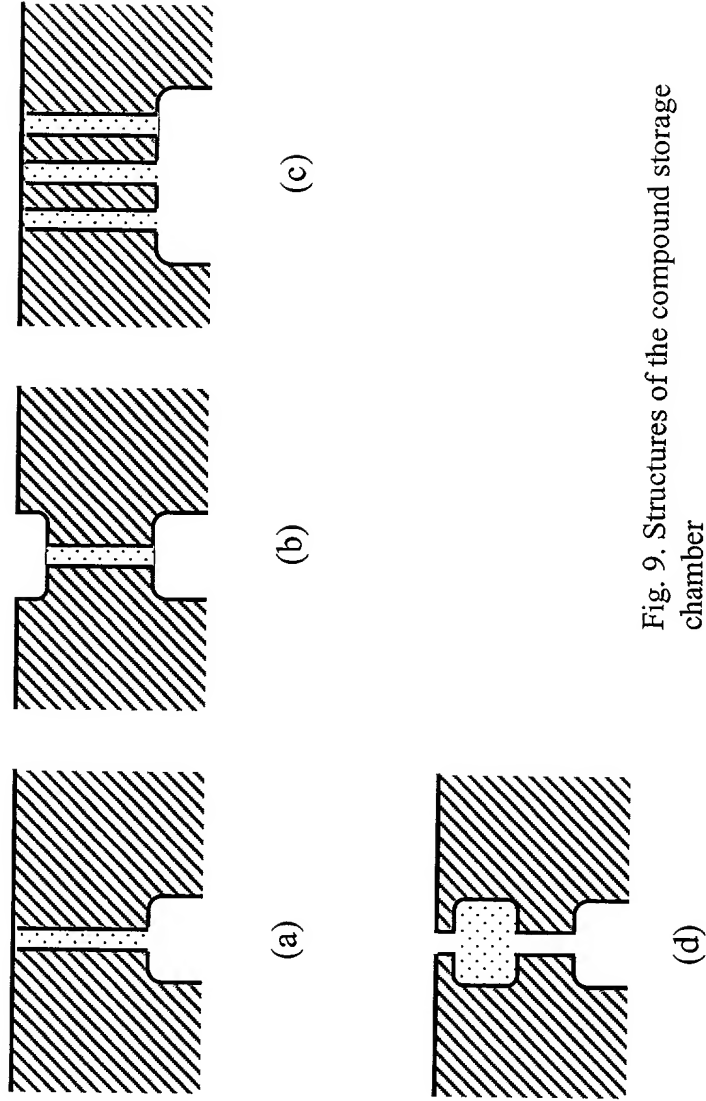


Fig. 9. Structures of the compound storage chamber

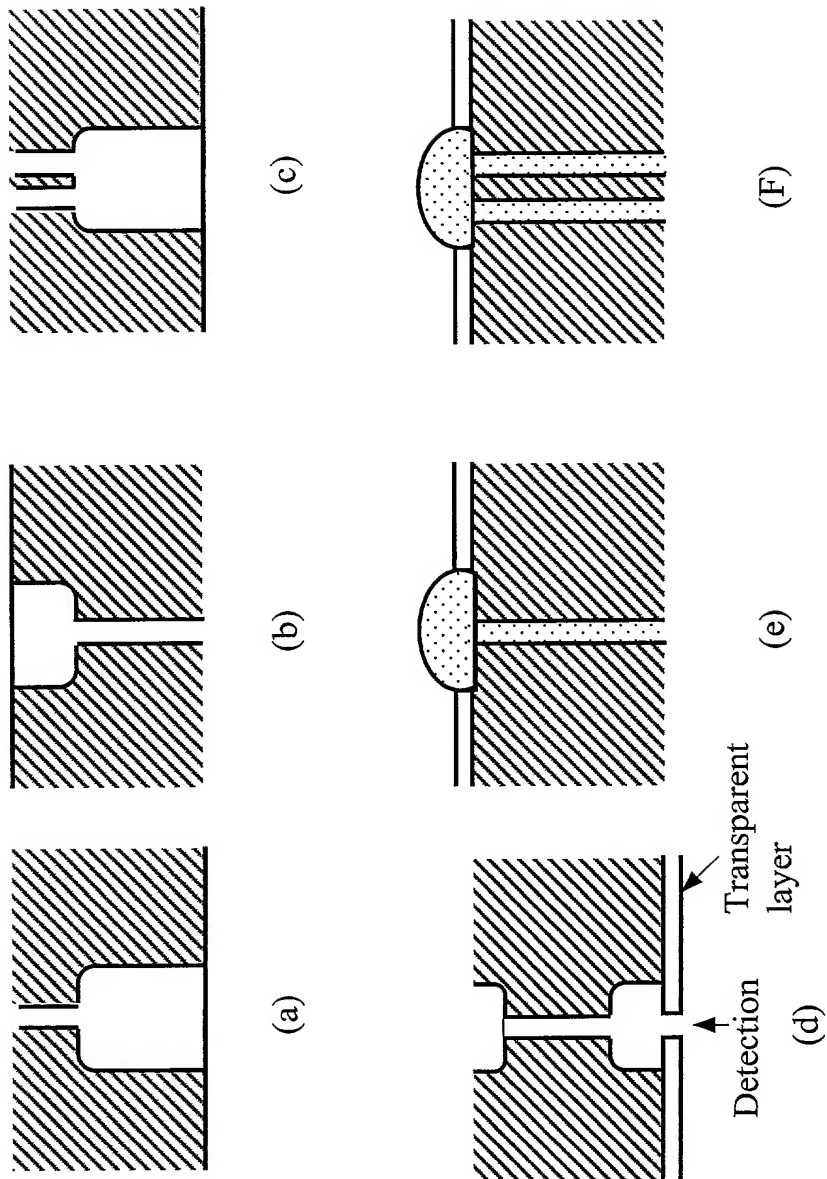
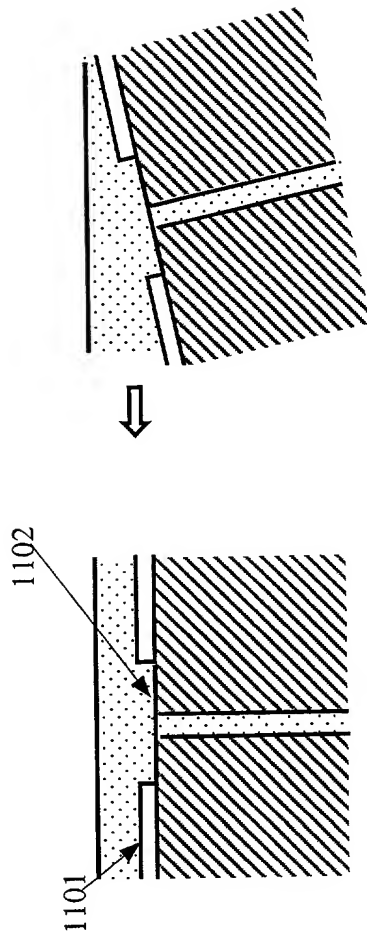
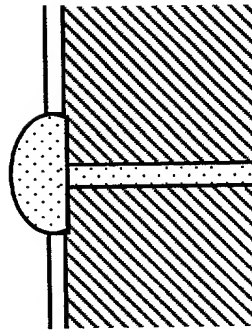


Fig. 10. Internal structures of mixing/reaction chamber

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(a)



(c)

(b)

1101 – Hydrophobic coating
1102 – Hydrophilic coating

Fig. 11. Volume metering by surface tension patch

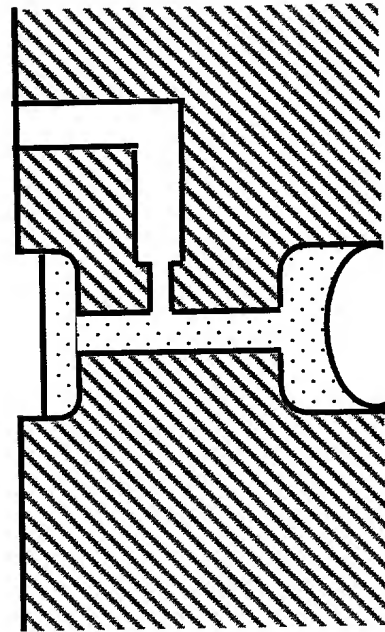


Fig. 12. Fluid regulator with side air tunnel

Fig. 13 Internal through hole structures to facilitate chamber volume metering and mixing

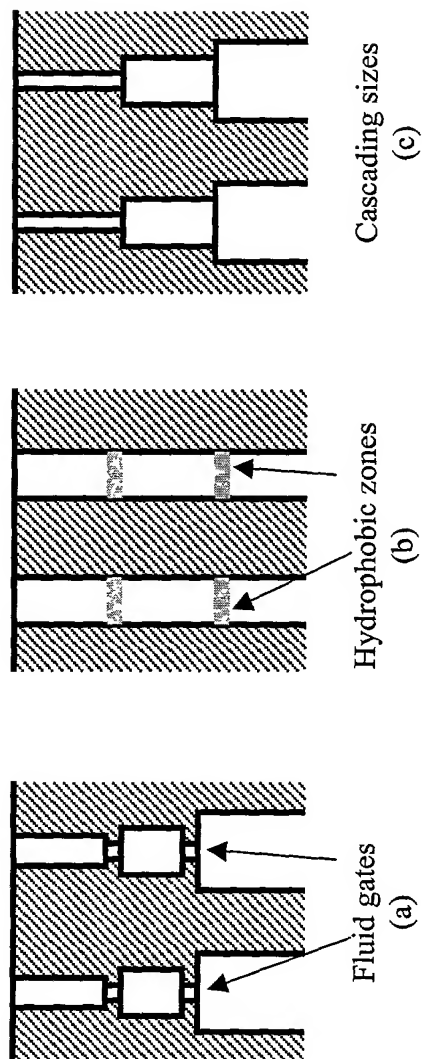


Fig. 14 Process of metering multiple reagents using interconnected chambers

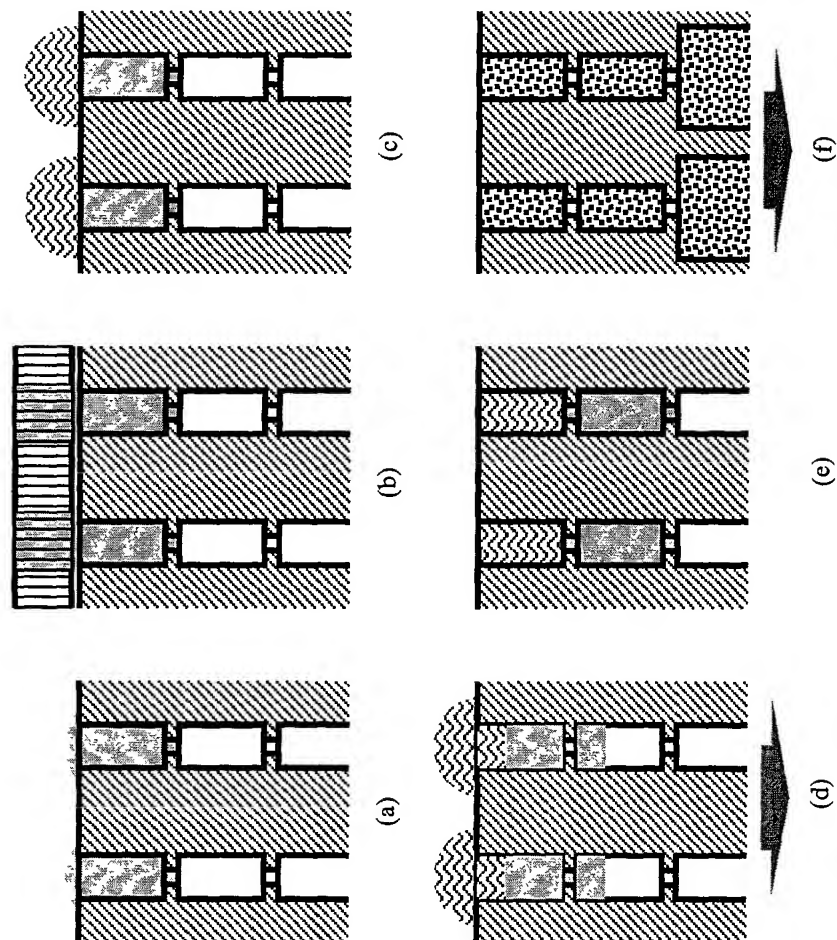
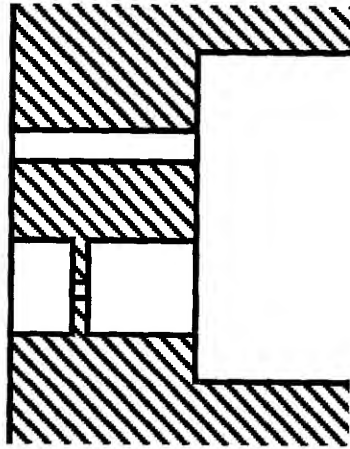


Fig. 15 Special through hole structure where multiple chambers links to a chamber in parallel



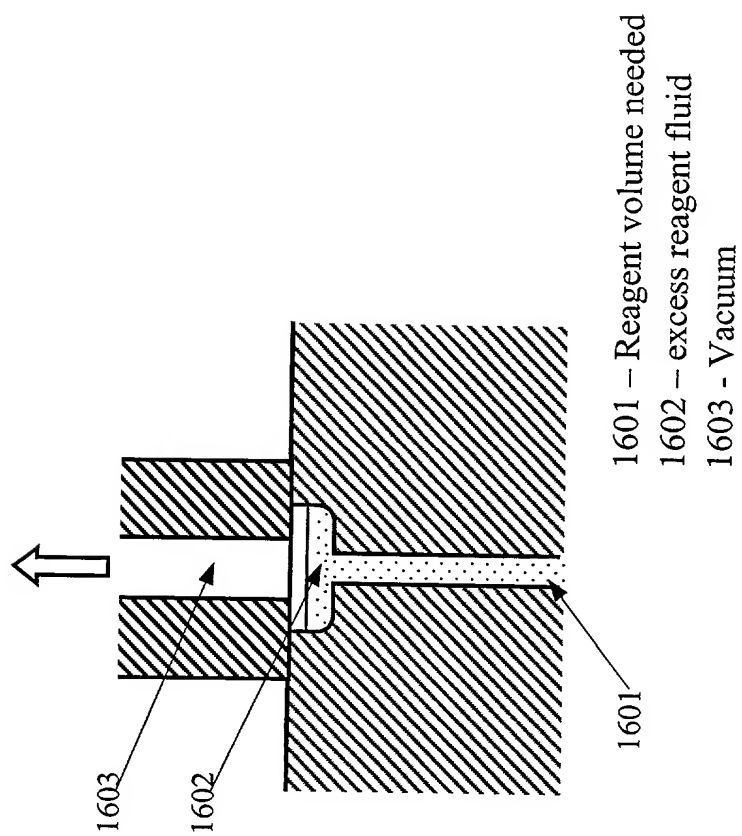


Fig.16. Removal of excess fluid by vacuum

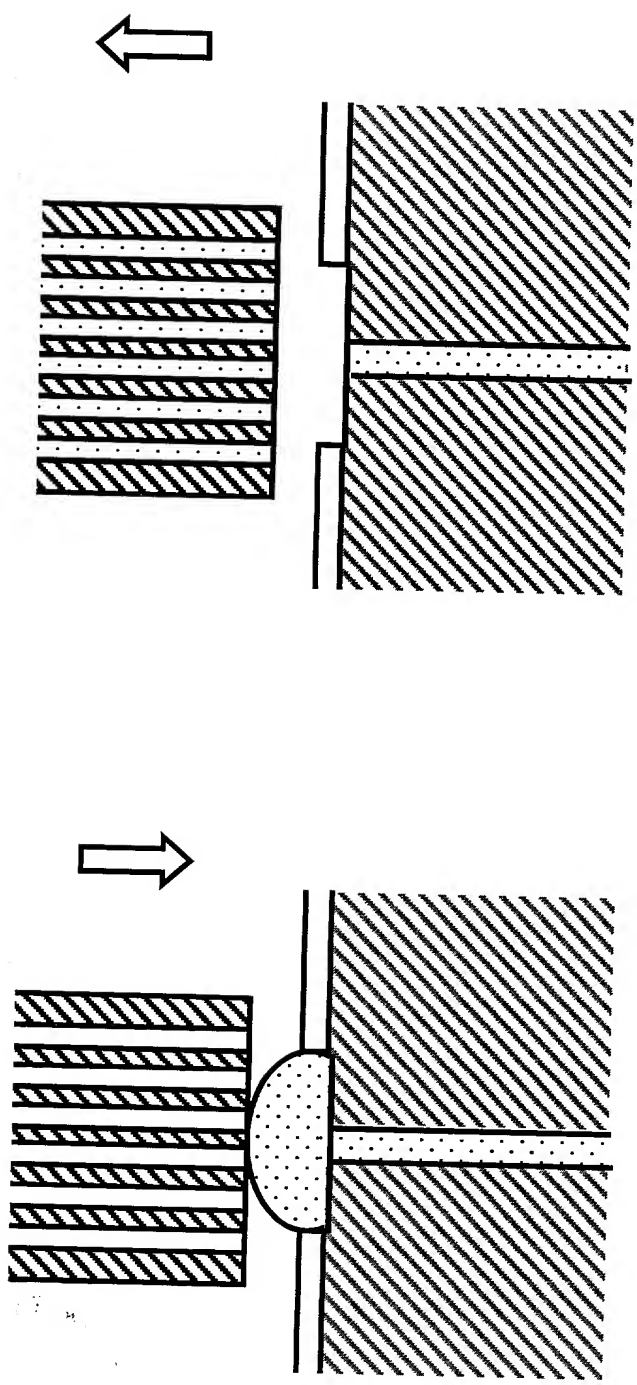
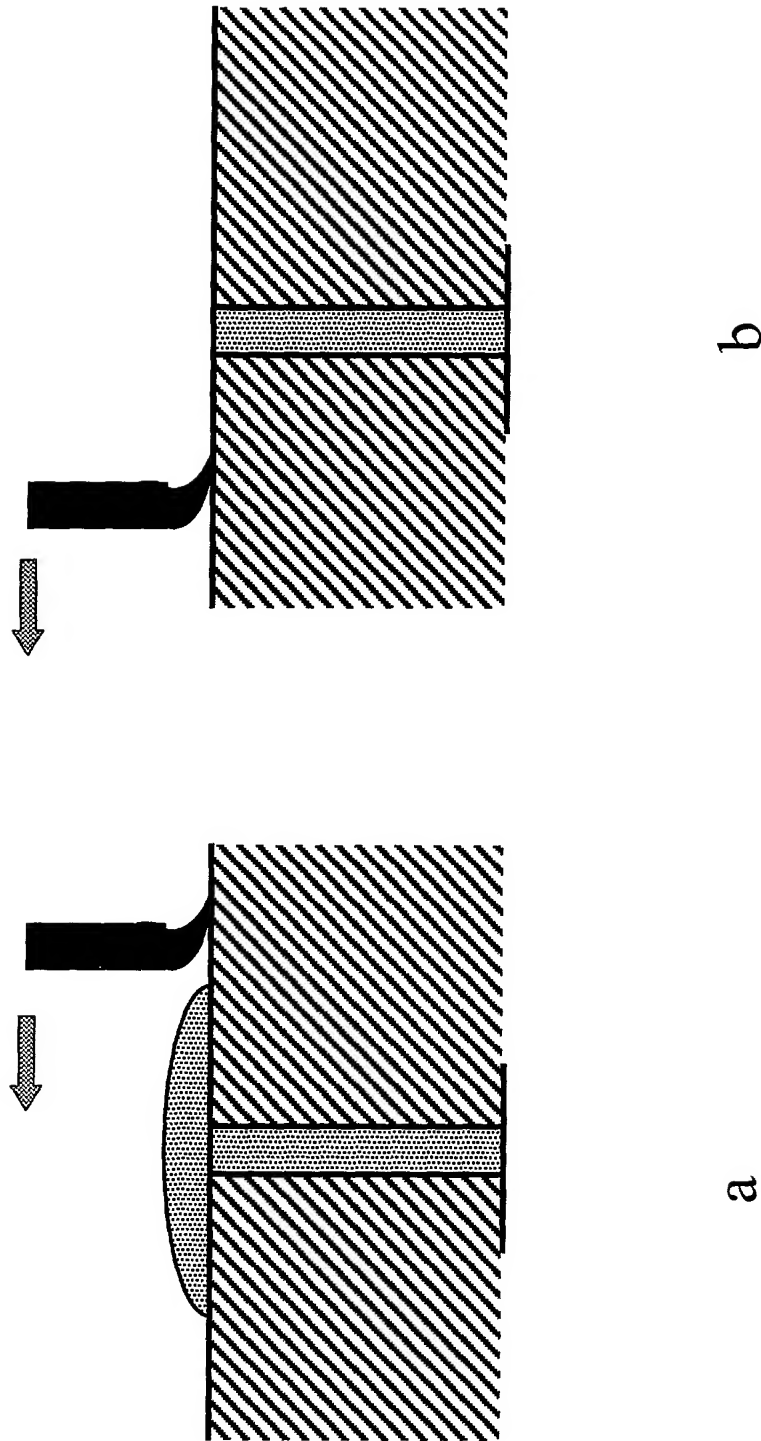


Fig. 17. Excess fluid removal using a second capillary array

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Fig. 18. Excess Fluid Removal by Wiping



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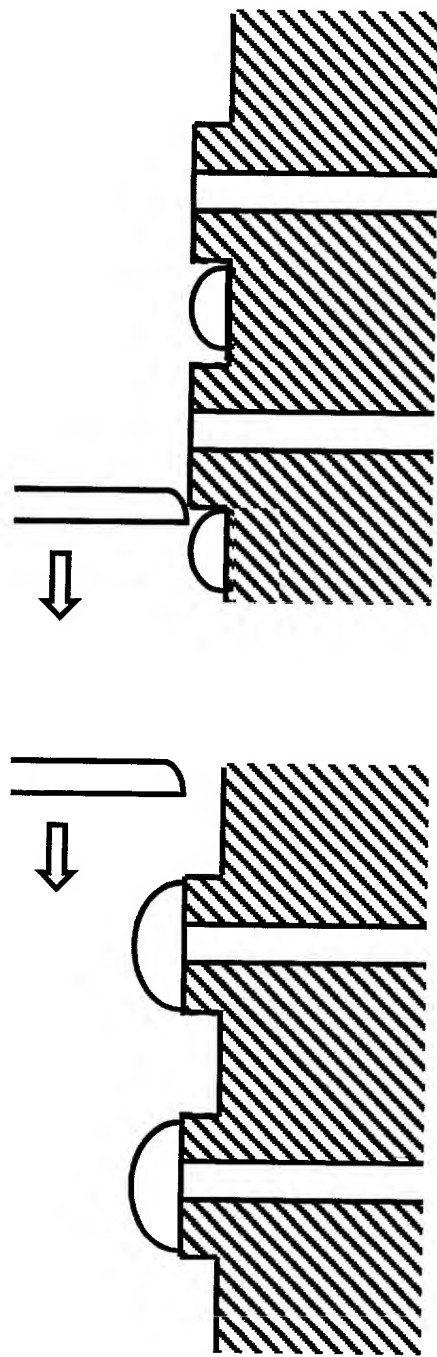
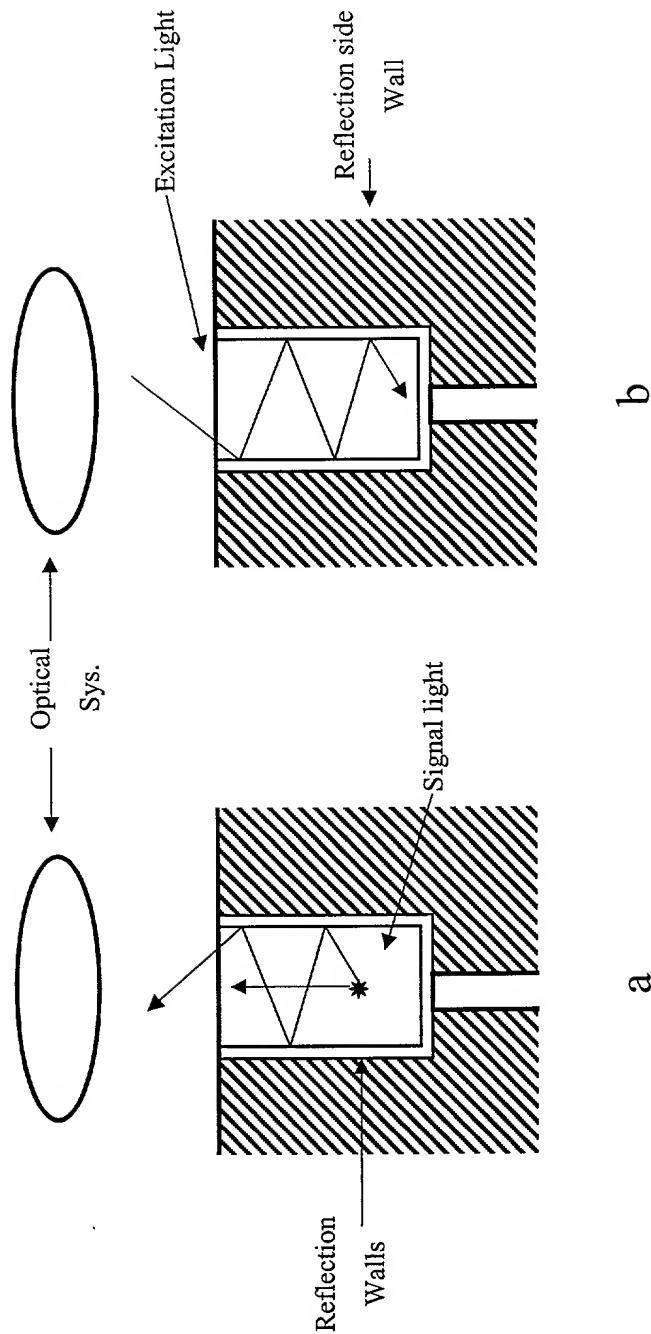


Fig.19. A method for reducing cross-contamination between adjacent holes during excess fluid removal

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Fig. 20. Using Reflection Wall of Reaction Chamber to Enhance Optical
Signal of the Assay



205740-12000T

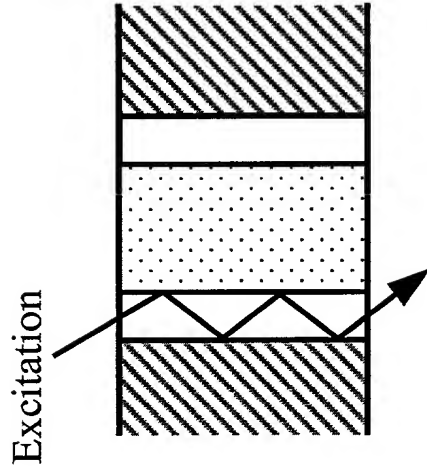
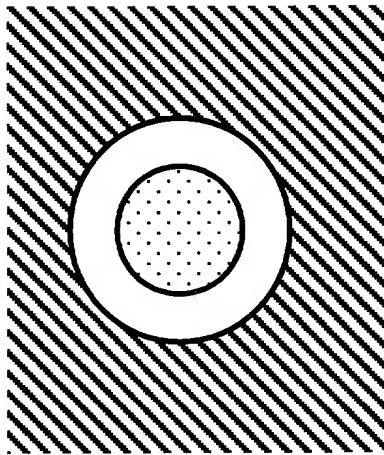
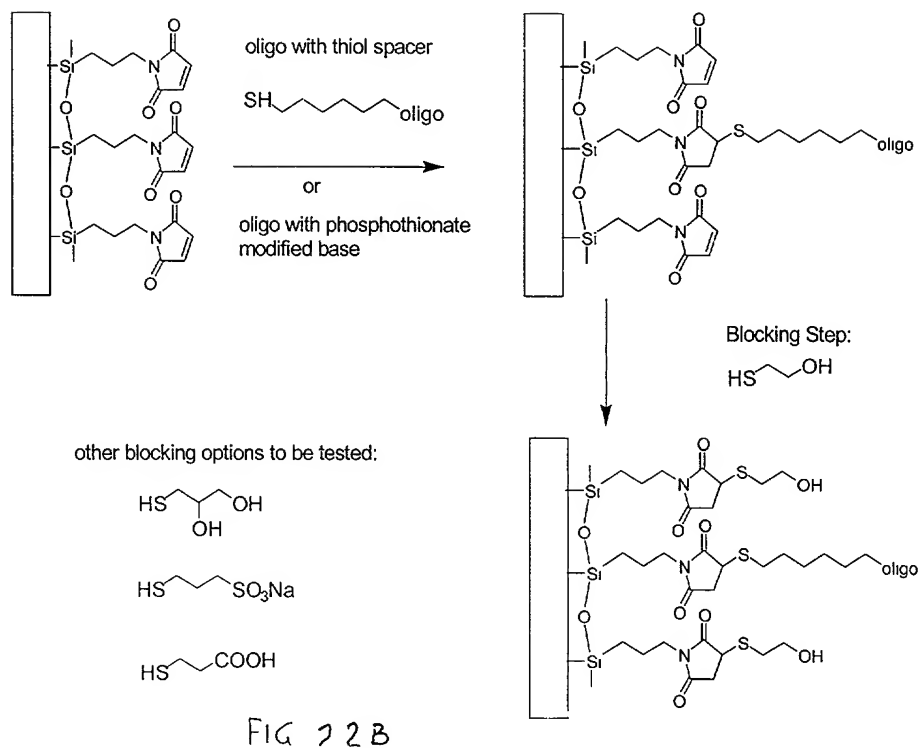
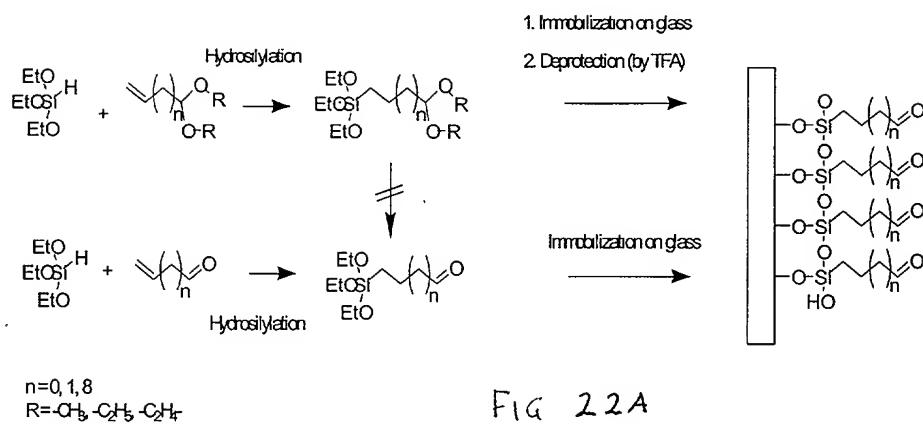


Fig 21. Light guiding capillary



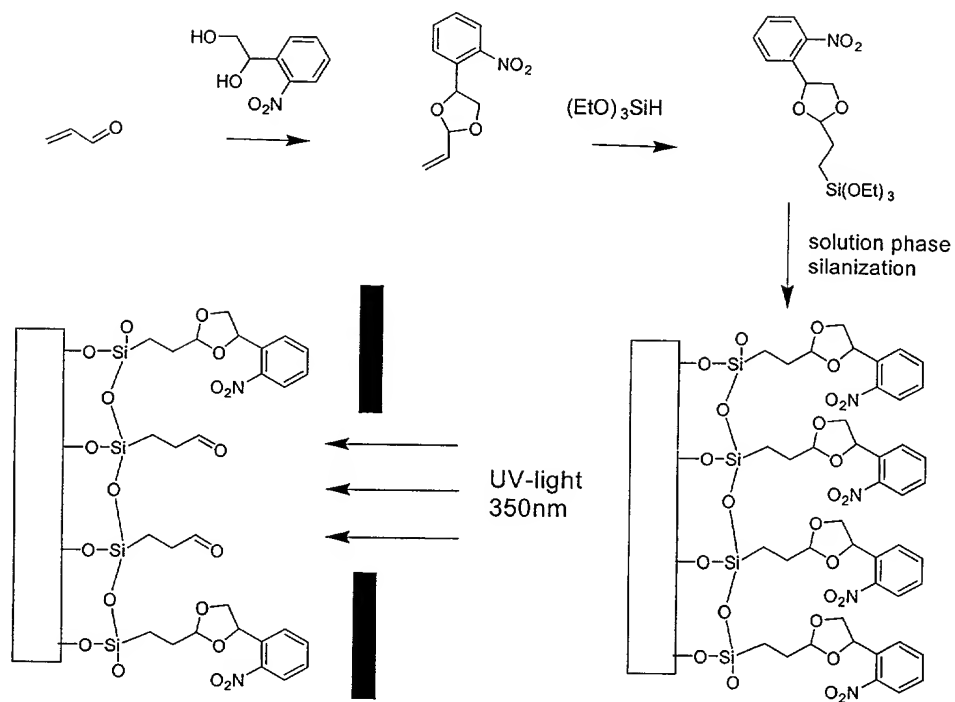


FIG 22C

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Figure 23 Process for fabrication using a negative mask

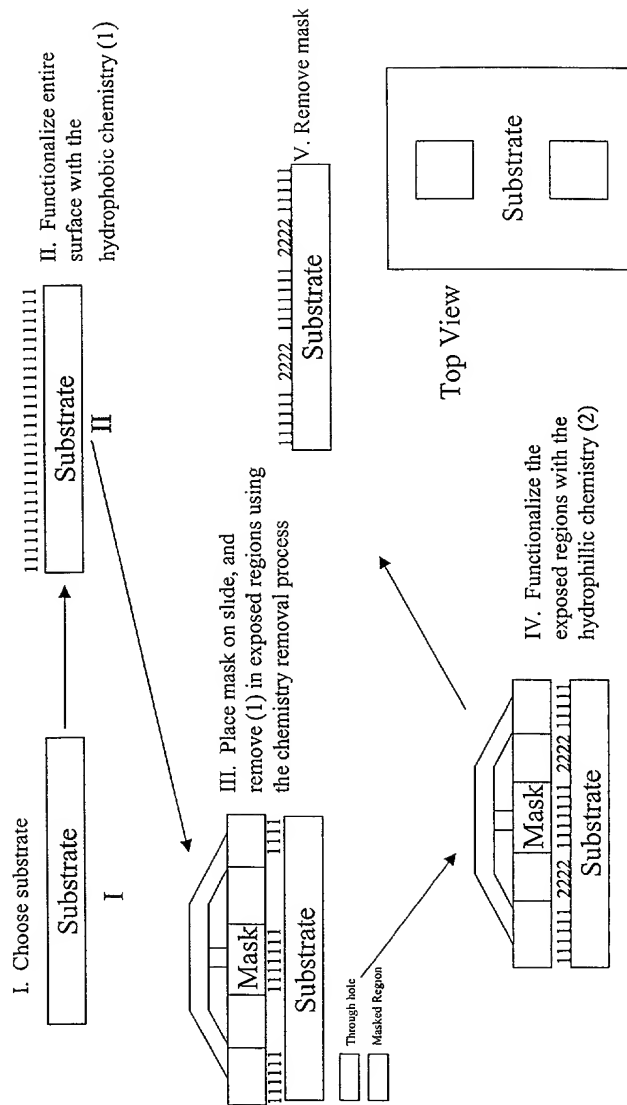


Figure 24 Process for the fabrication using positive

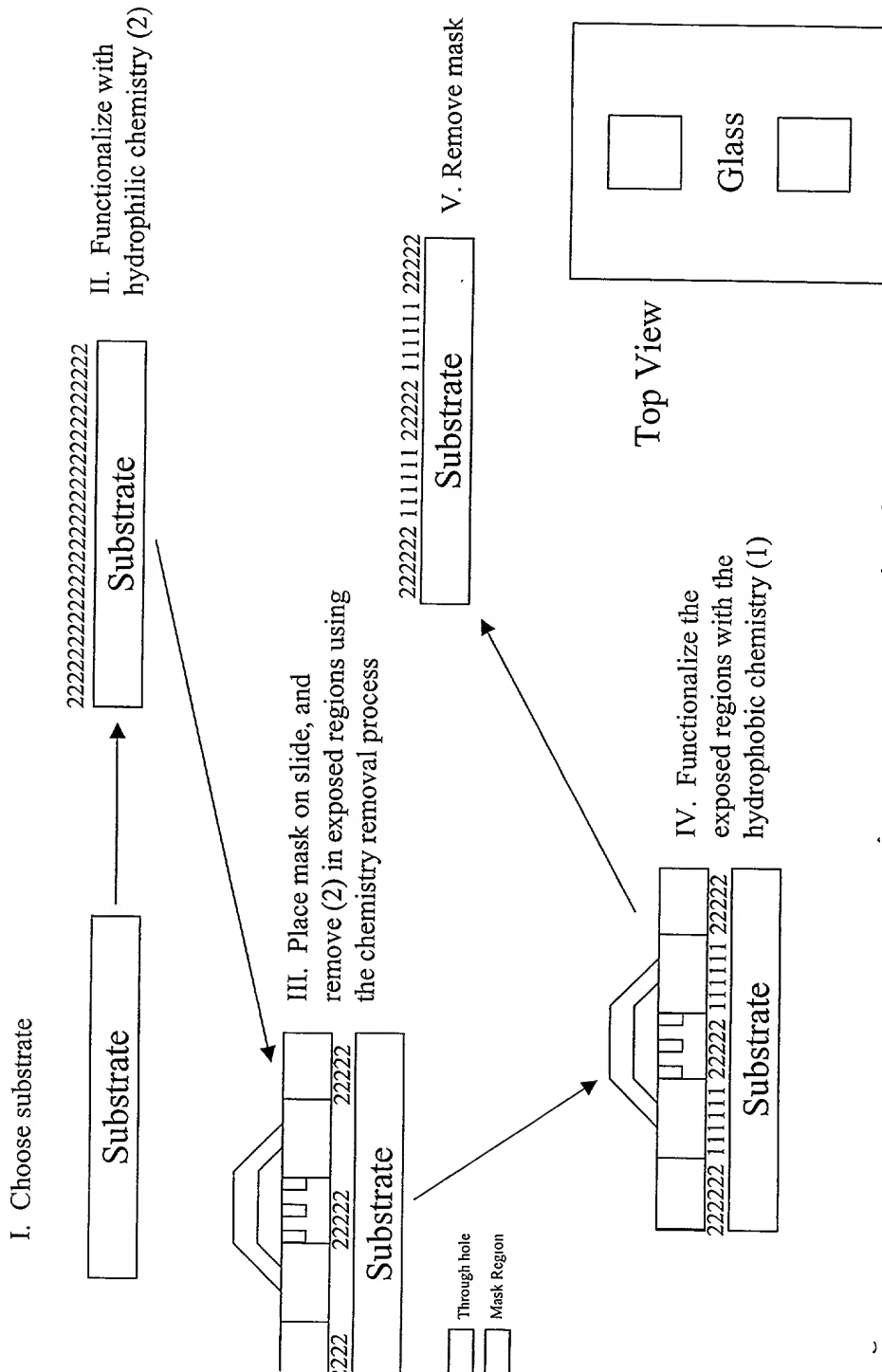


Figure 25 Chamber use

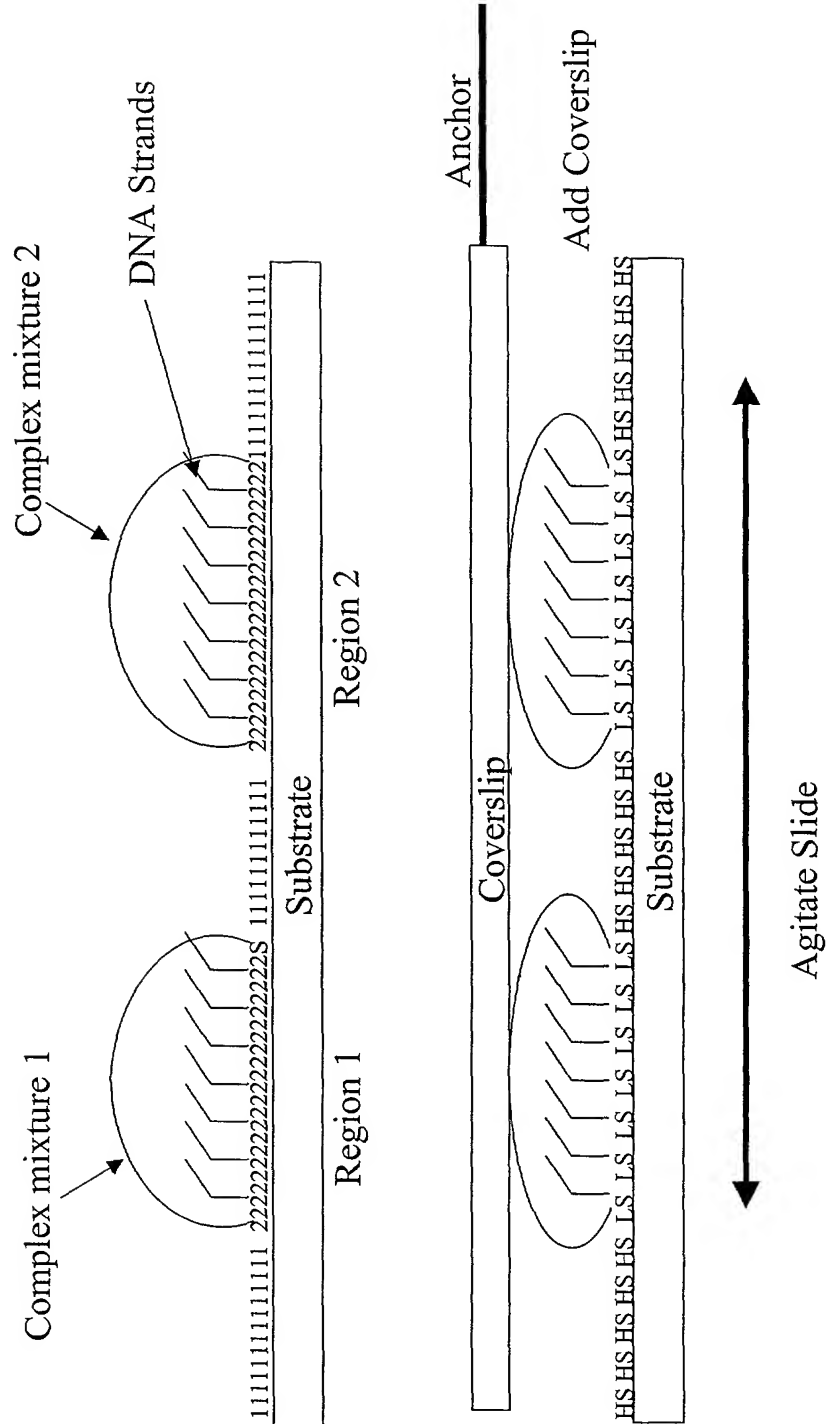


Figure 26B Surface Tension Patterning: On-capillary Fiber optic based patterning

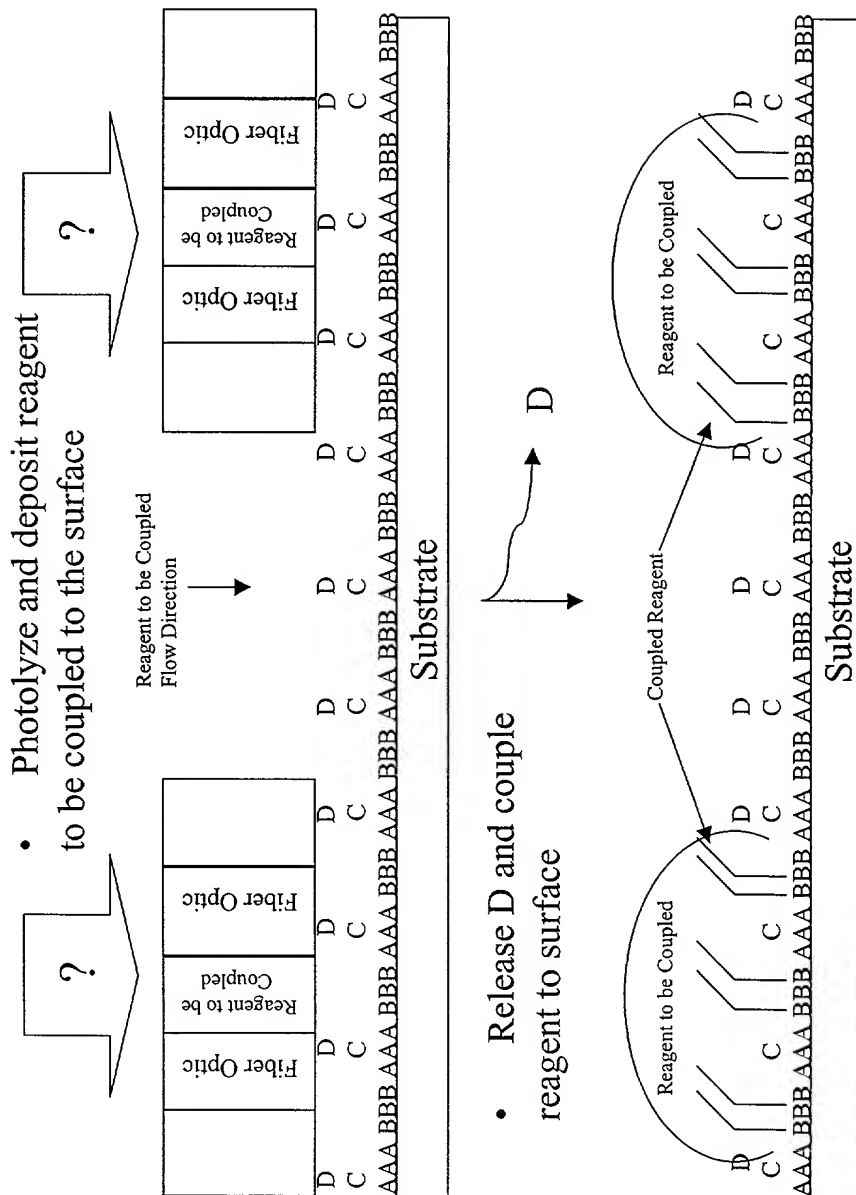


Figure 27A Volume Metering using Surface
Tension Features

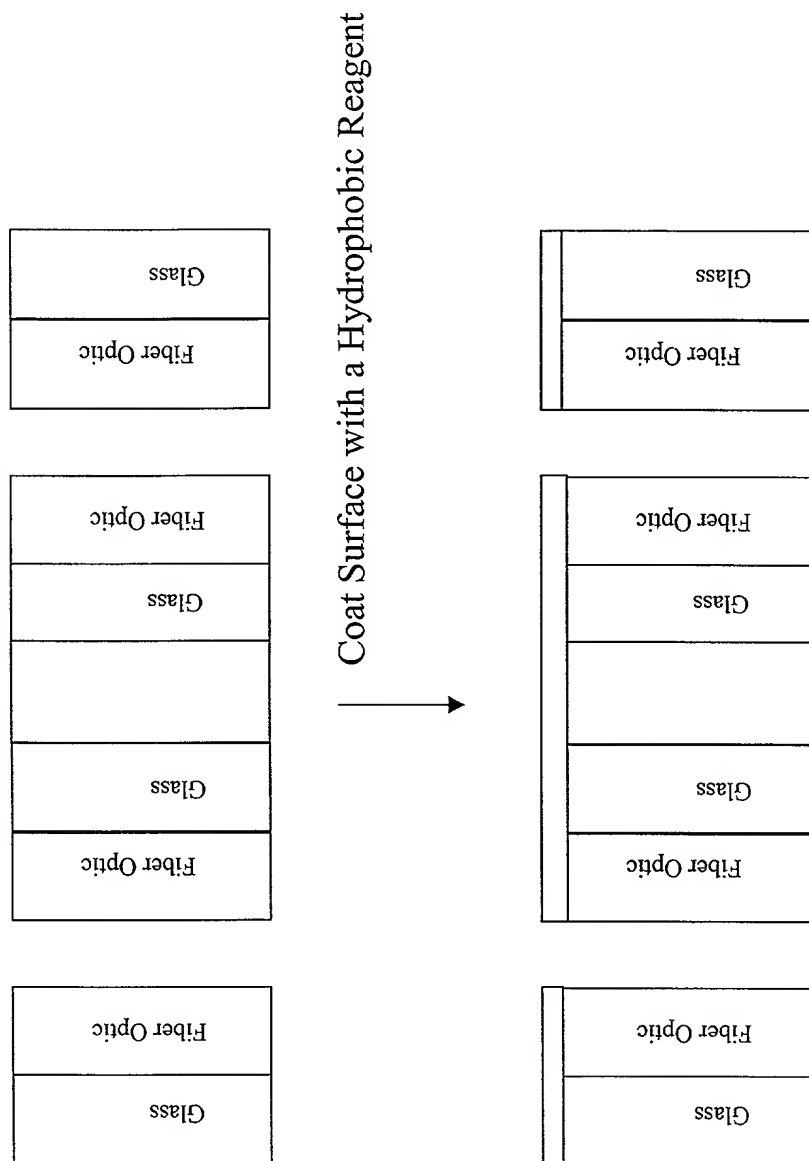


Figure 27B Volume Metering using Surface Tension Features

Place a Mask on the Surface and Expose the Surface to the Chemistry Removal Process

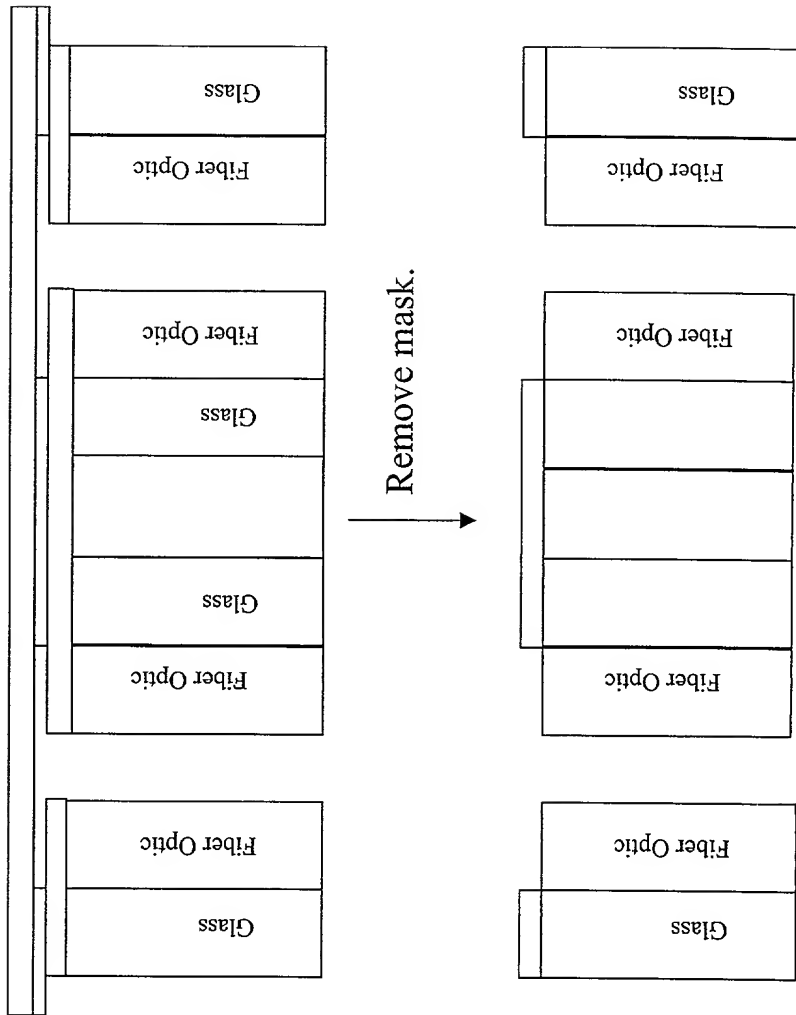
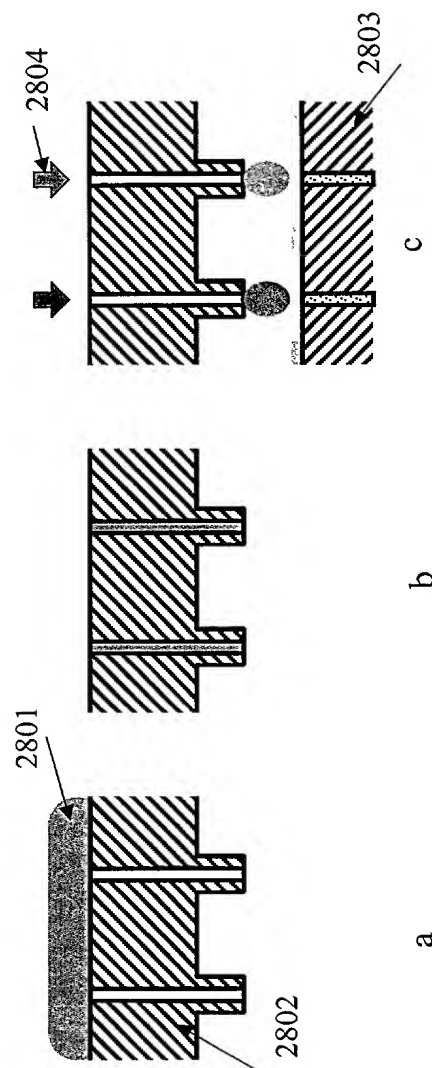


Fig. 28 Reagent pre-metering using an intermediary through-hole array



2801 - reagent fluid applied in excessive;
2802 - intermediary through hole array;
2803 - capillary array compound library;
2804 - pressure

Fig. 29 Metering and mixing with a multi-use capillary array
compound library

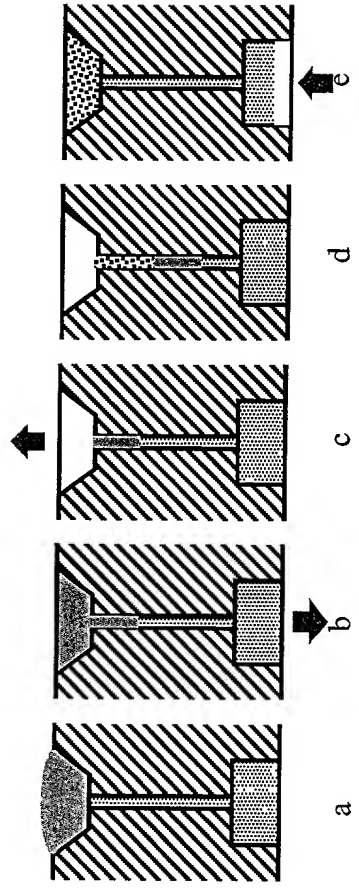


Fig. 30 Metering with hydrophilic patch and mixing

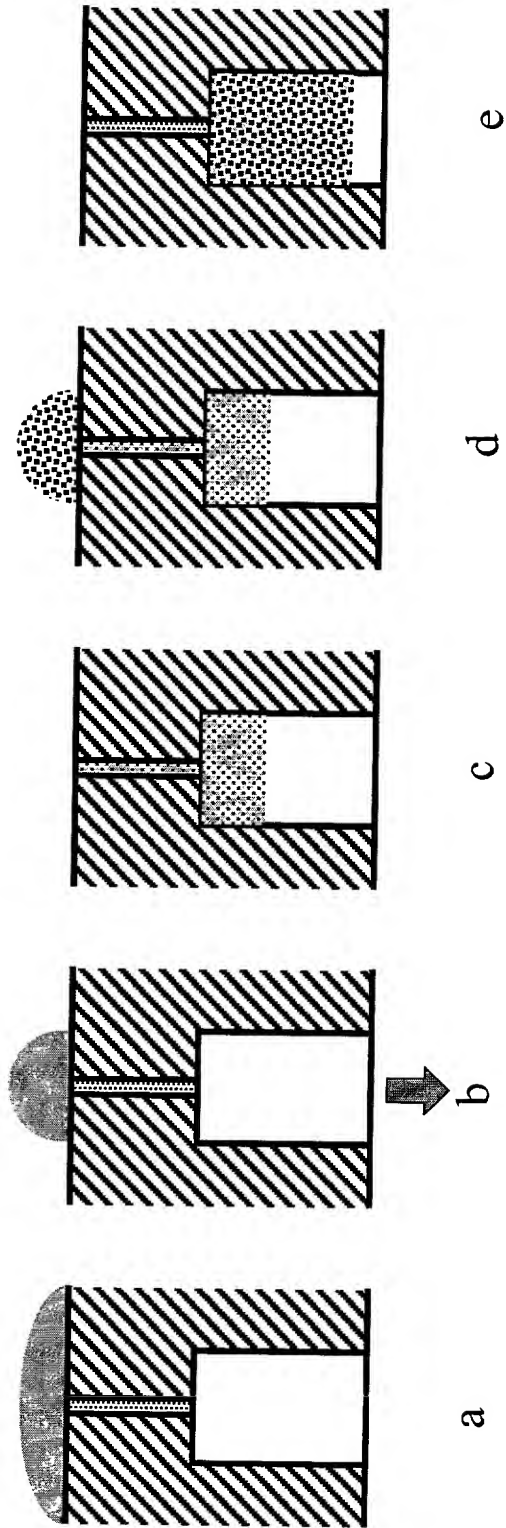


Fig. 31 Mixing and metering with interconnected chambers

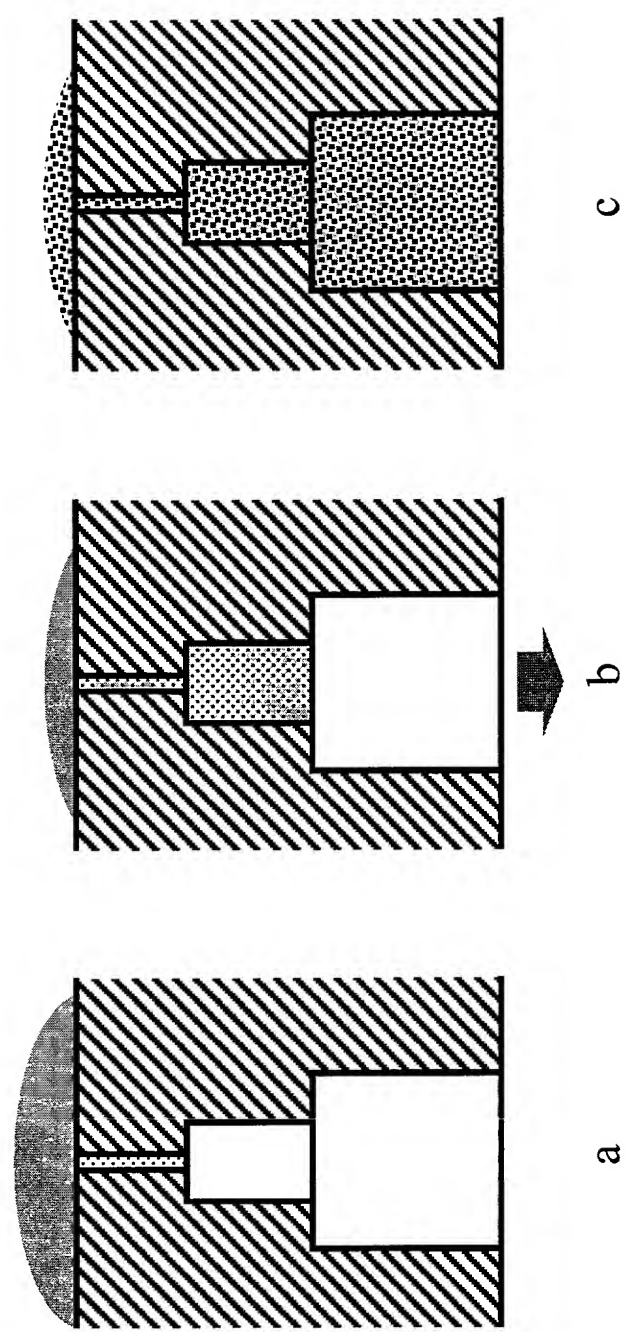
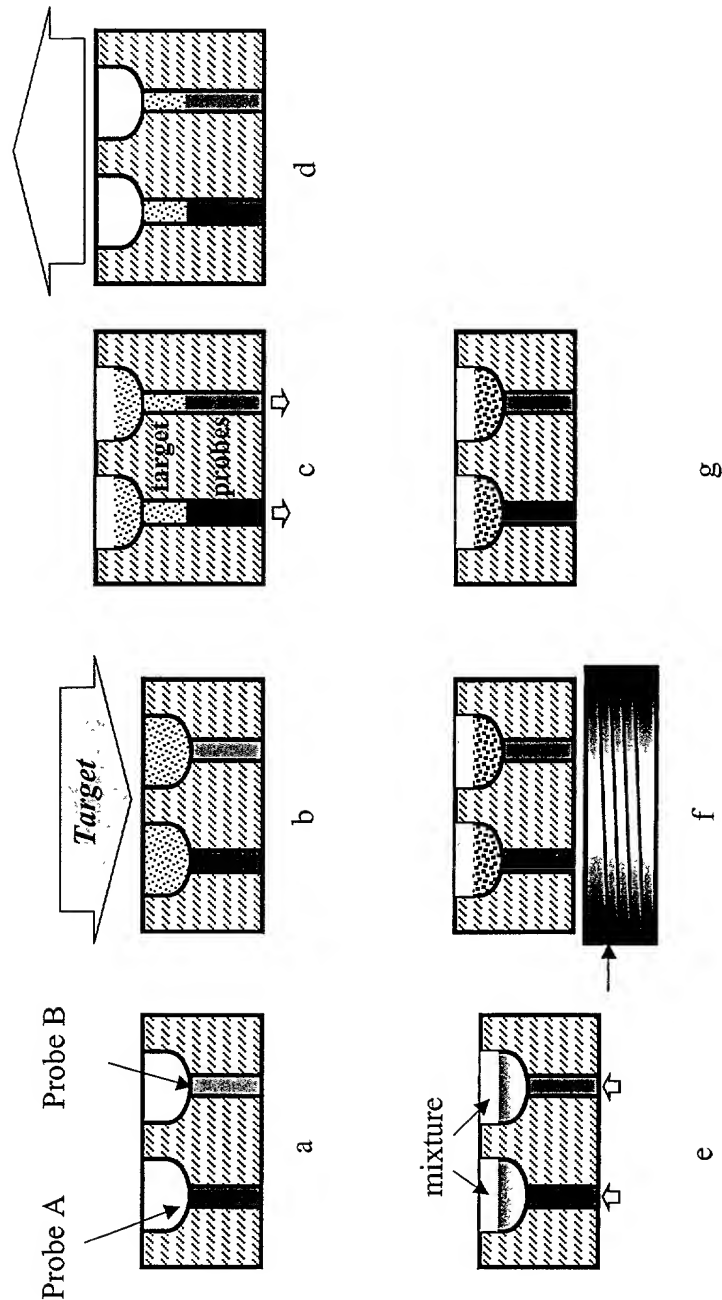


Fig. 32 Heterogeneous Assay

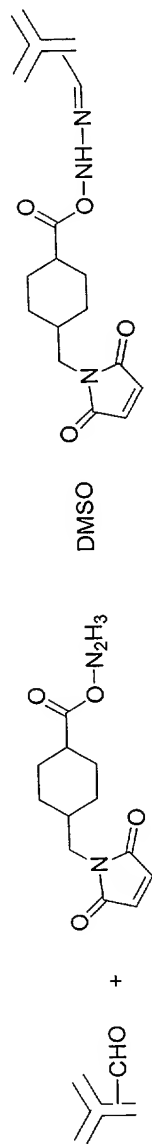


Antibody Immobilization via the Carbohydrate Moiety

1. Oxidation of antibodies vicinal diol group to its aldehyde



2. Conjugation of maleimide moiety with antibody



3. Immobilization of the modified antibody to the surface.

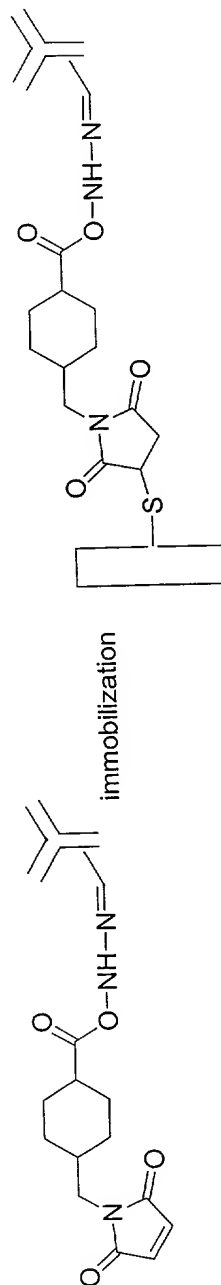
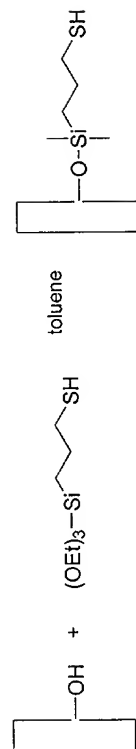


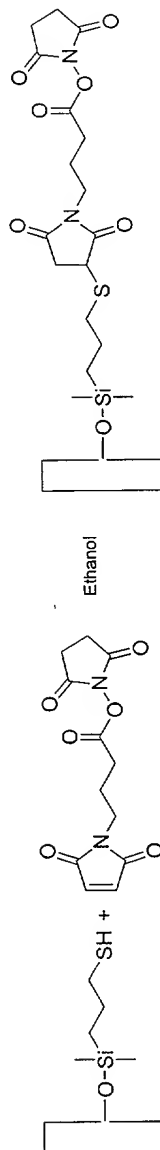
FIG. 33A

Immobilization via Amine Groups

1. Hydrosilylation of (3-mercaptopropyl)triethoxysilane on the surface of fiber



2. Formation of a thioether bond



3. Attachment of fiber to antibody

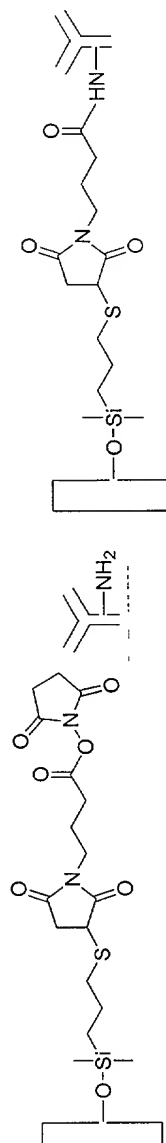
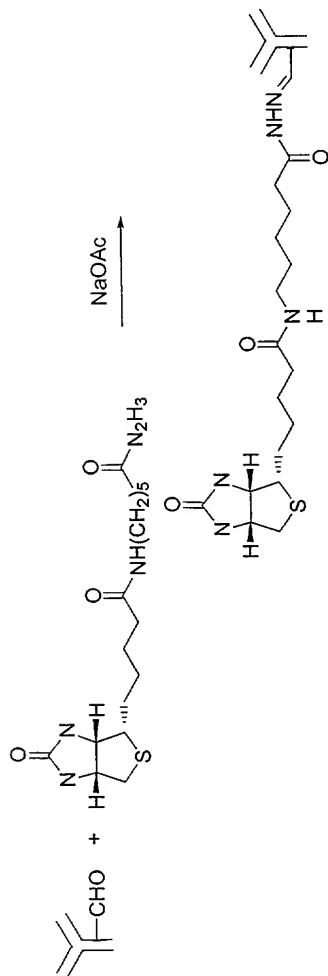


FIG 33B

Antibody Immobilization via Streptavidin

1. Label antibody with biotin



2. Modification of fiber surface with biotin maleimide

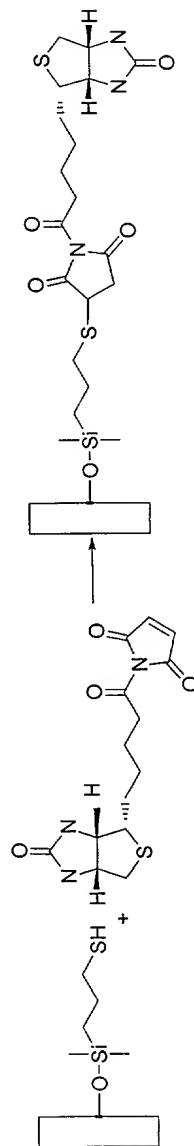
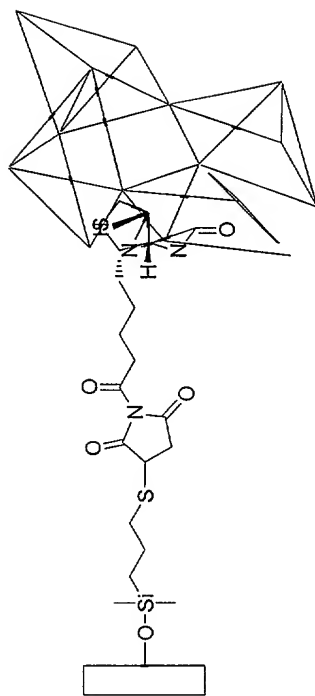


FIG 33c

Meeting 12/14/01

Antibody Immobilization via Streptavidin

3. Conjugate Streptavidin to the surface



4. Conjugate Biotin Antibody to the surface

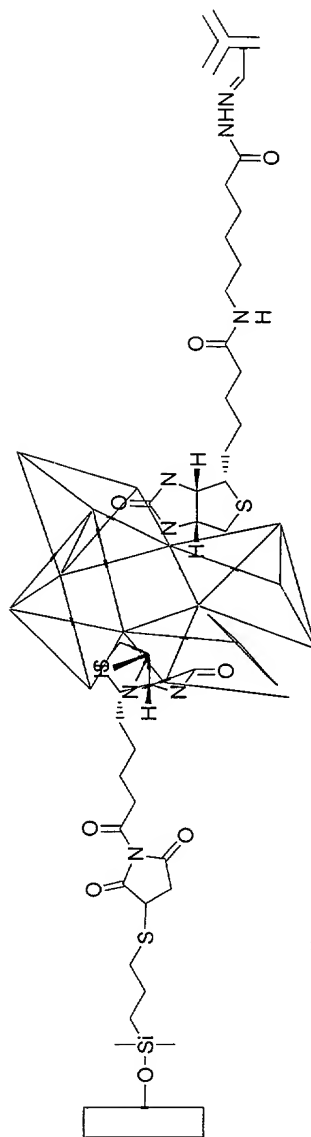
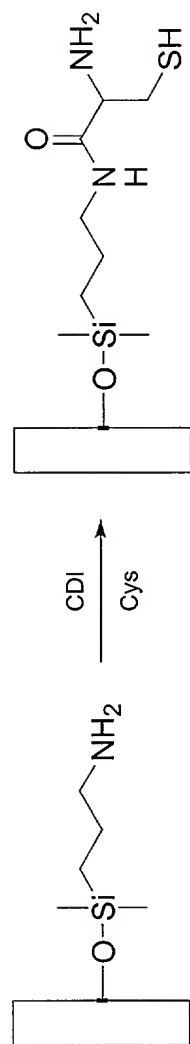


Fig. 33D

Formation of thiazolidine

1. Surface attachment and formation of the linker



2. Thiazolidine formation

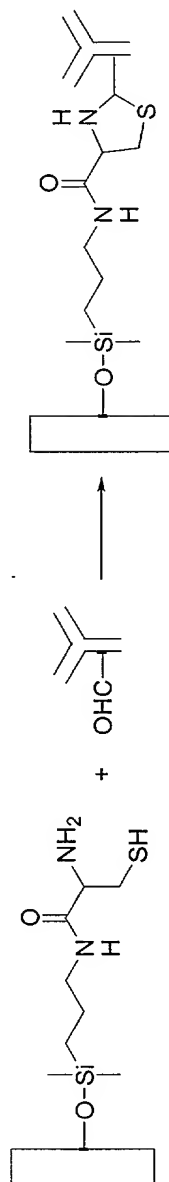
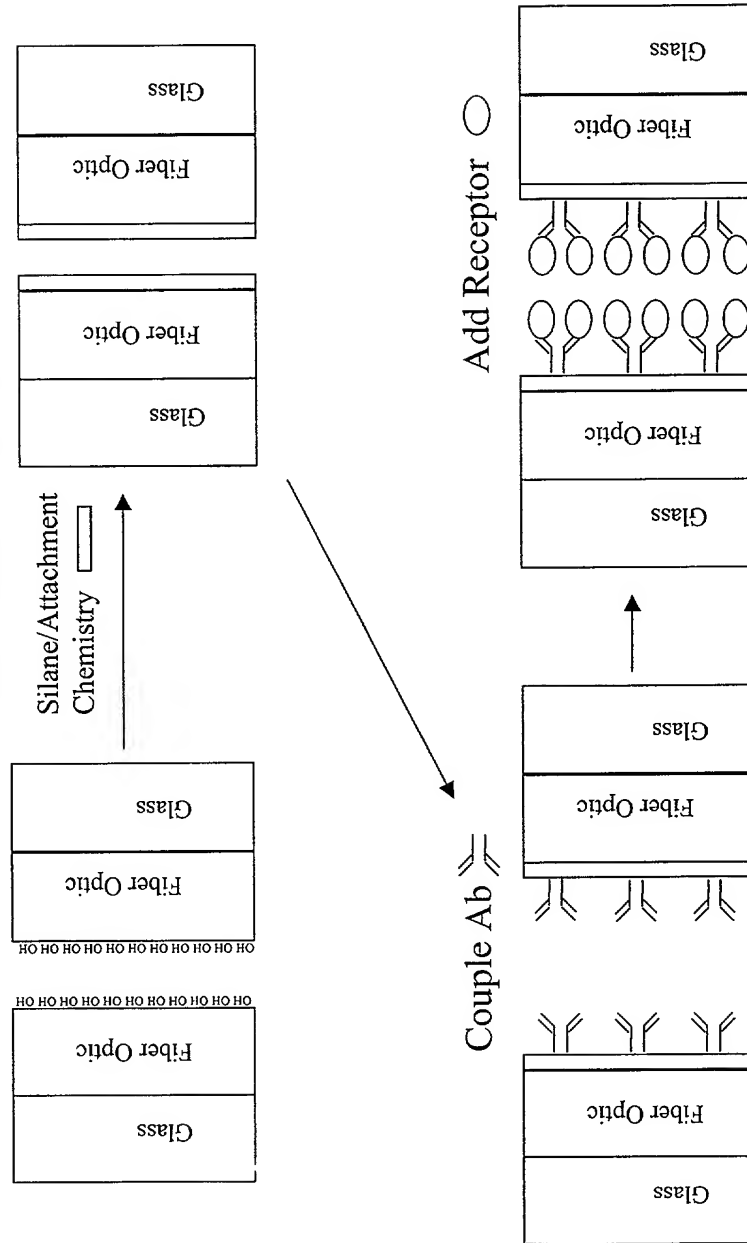


FIG. 33E

Figure 34 Capillary Based Receptor Binding Assay Non-equilibrium



**Figure 34 (cont. 1). Capillary Based Receptor Binding
Assay: Non-equilibrium**

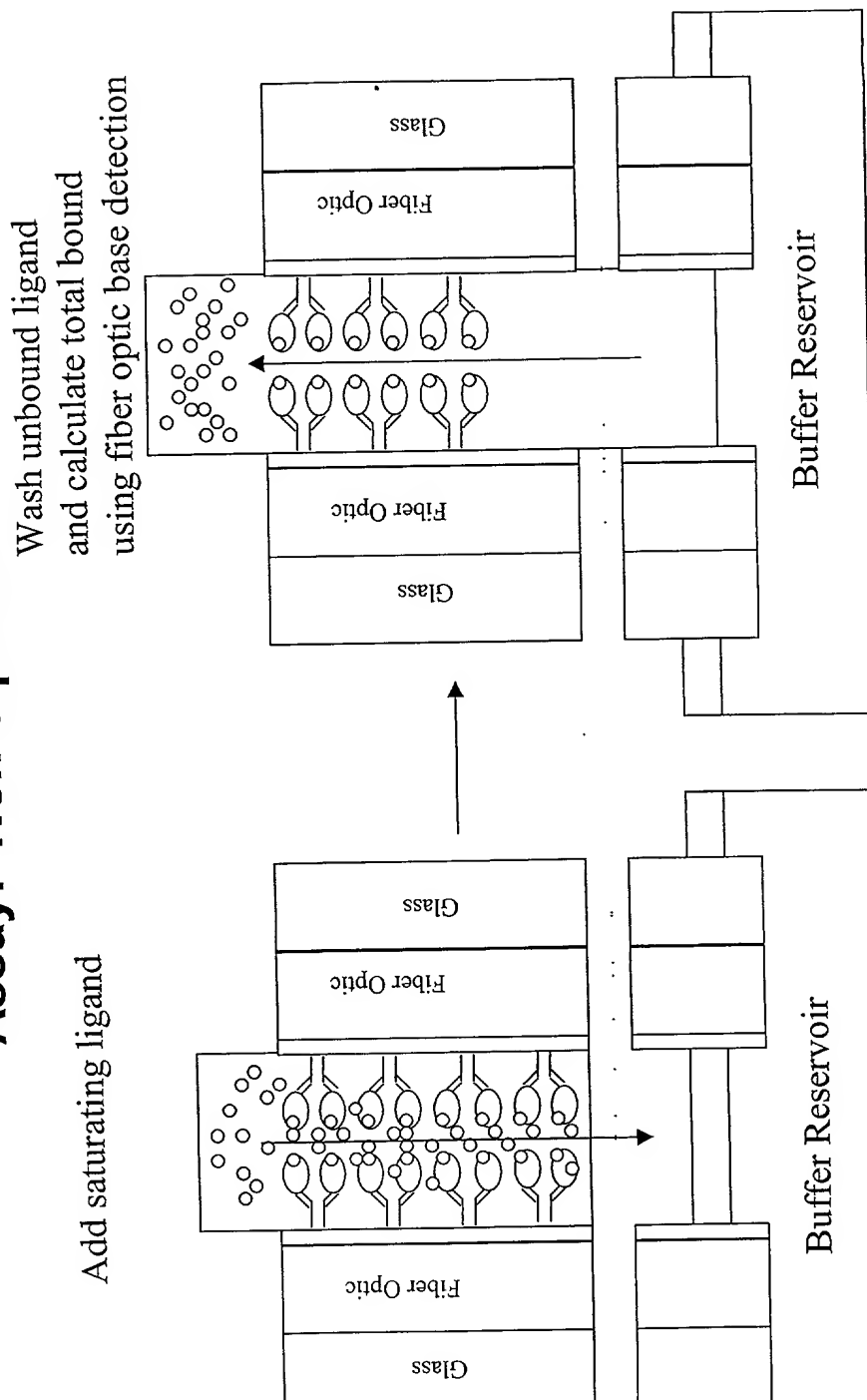


Figure 34 (cont. 2). Capillary Based Receptor Binding Assay: Non-equilibrium

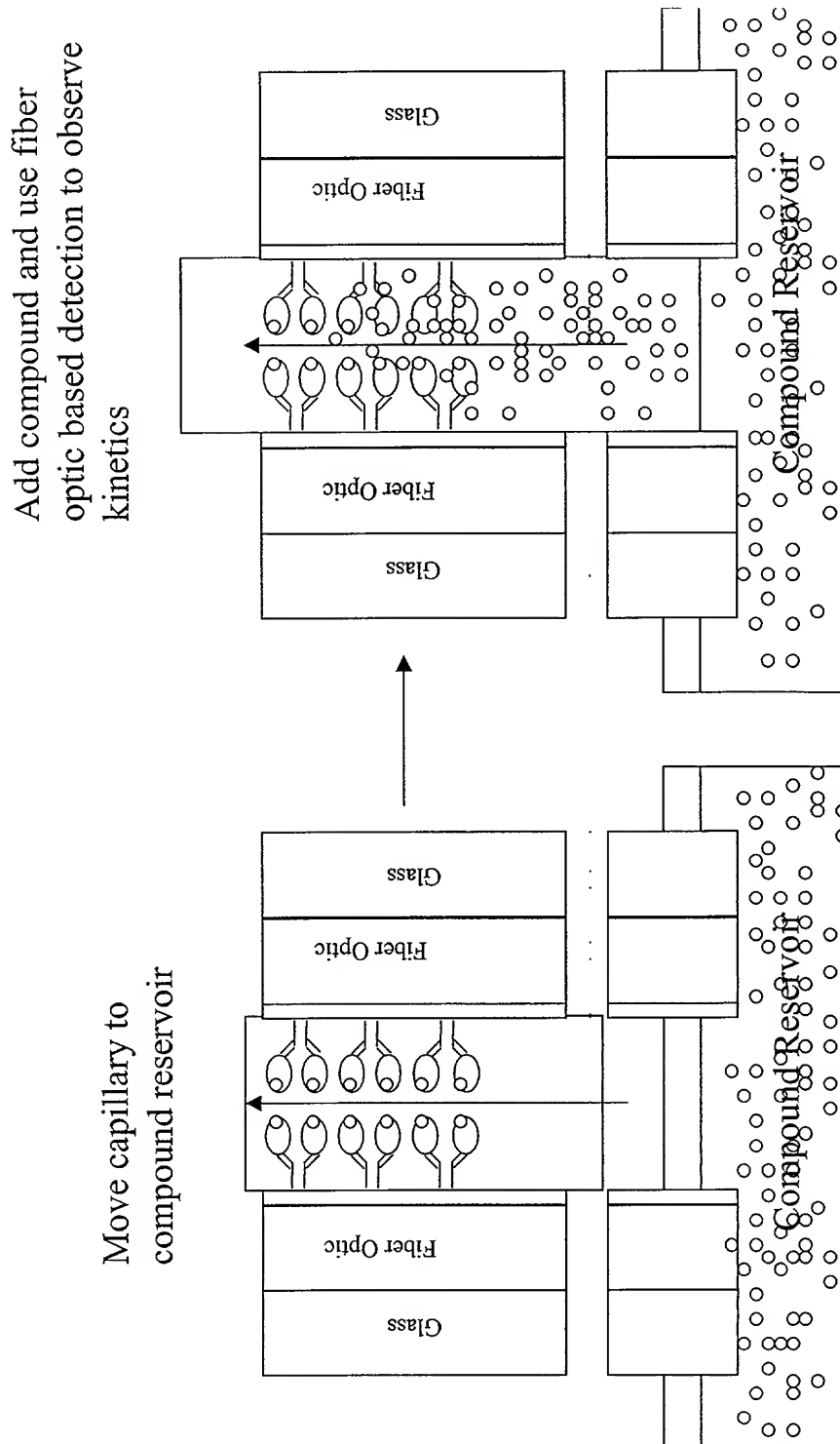
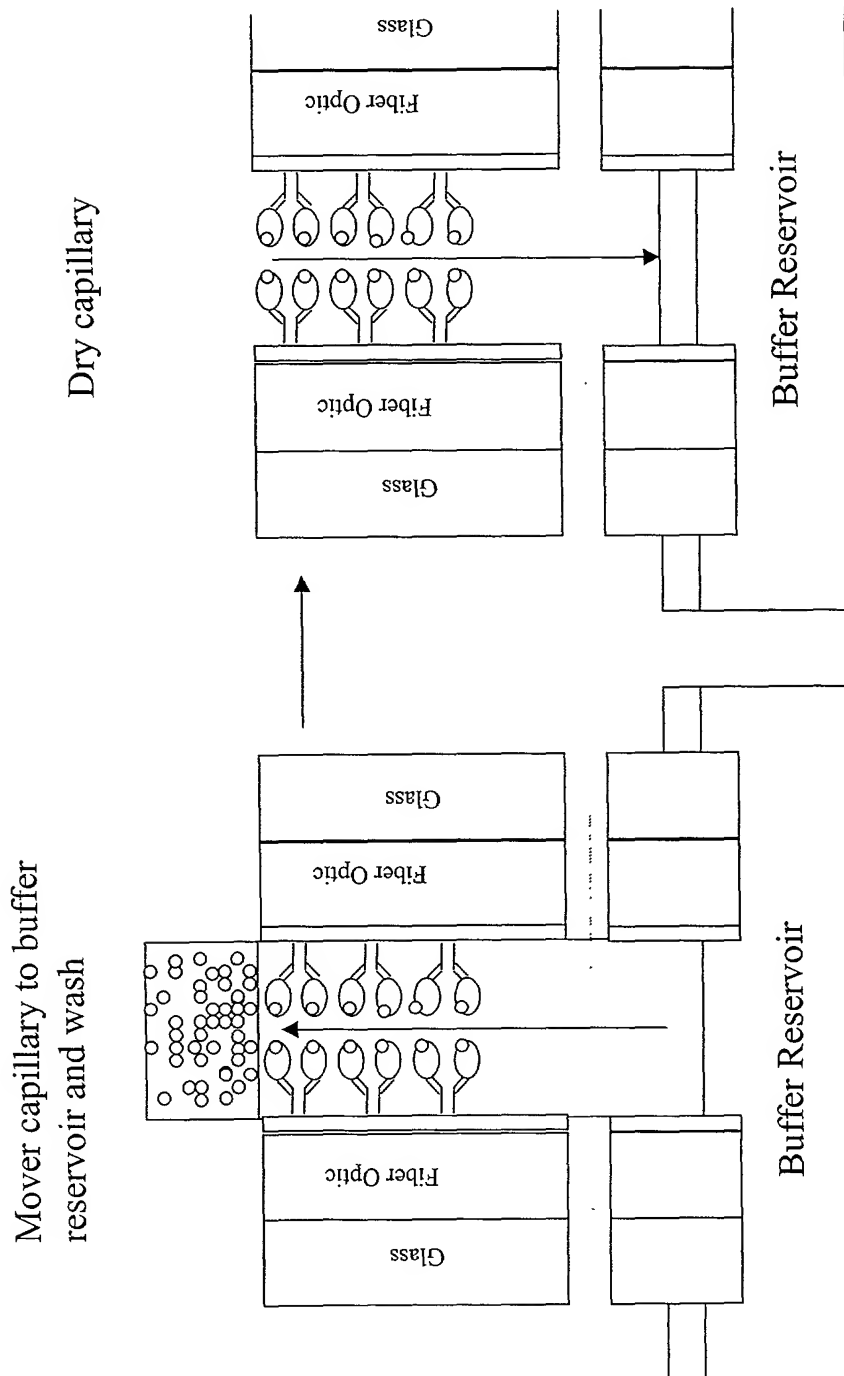
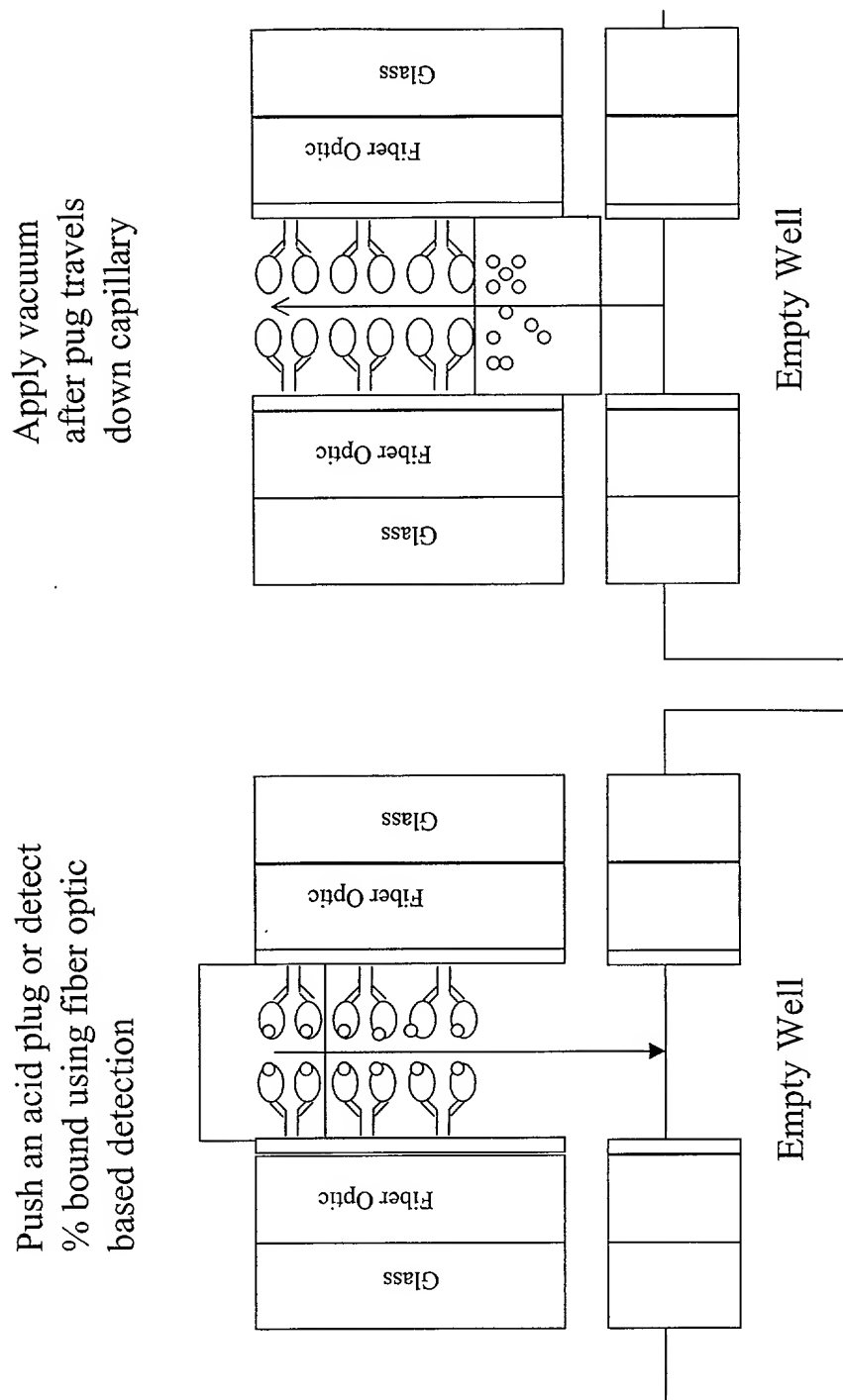


Figure 34 (cont. 3). Capillary Based Receptor Binding Assay: Non-equilibrium



**Figure 34 (cont. 4). Capillary Based Receptor Binding
Assay: Non-equilibrium**



**Figure 34 (cont. 5). Capillary Based Receptor Binding
Assay: non-equilibrium**

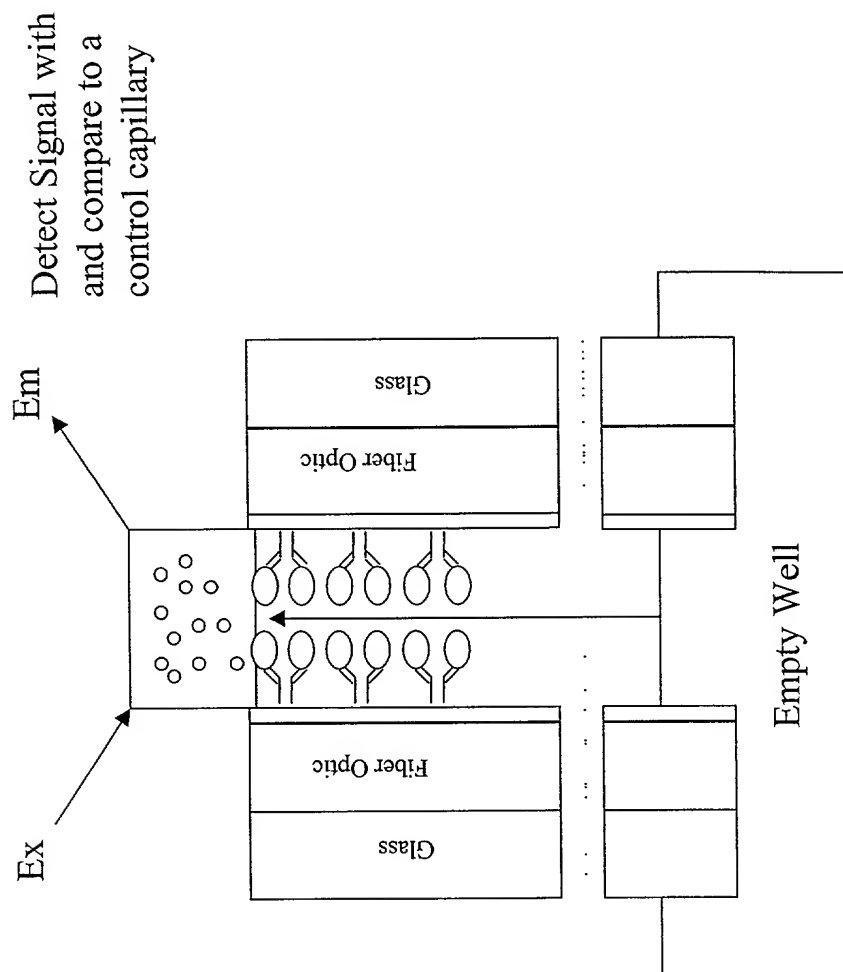


Figure 35 Capillary Based Receptor Binding Assay: Equilibrium

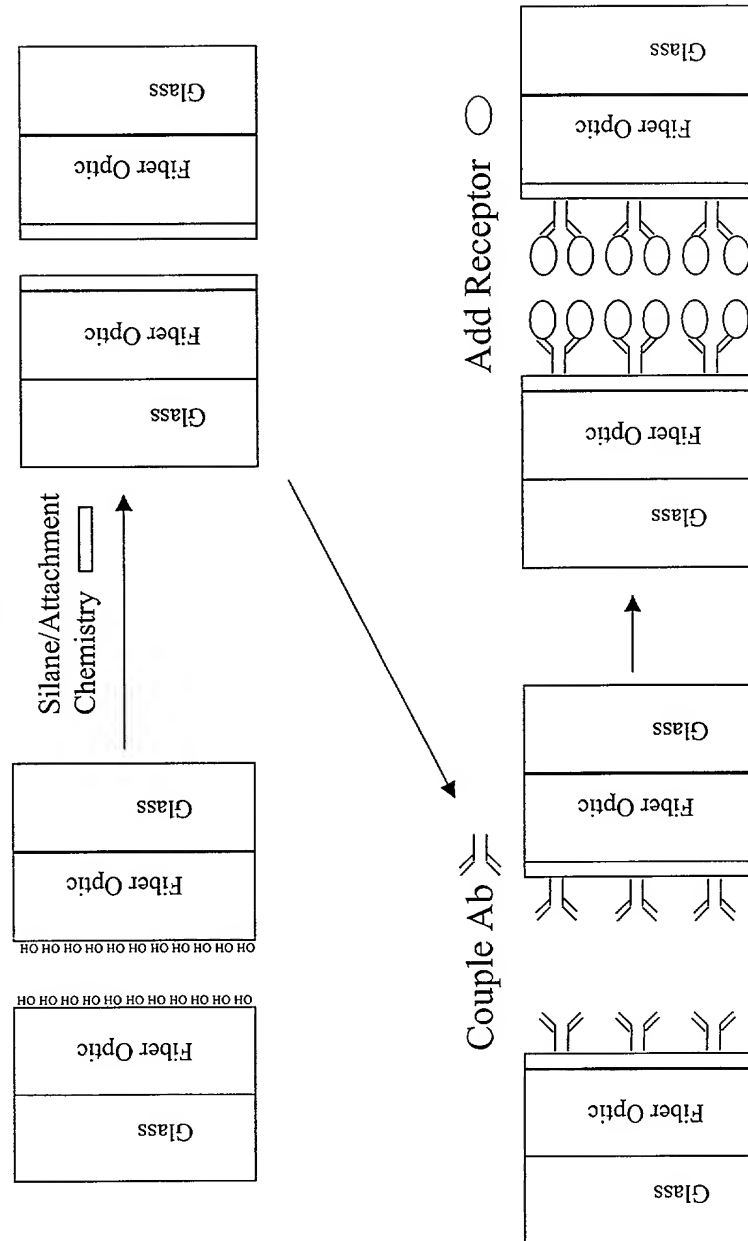


Figure 35 (cont. 1). Capillary Based Receptor Binding Assay: Equilibrium

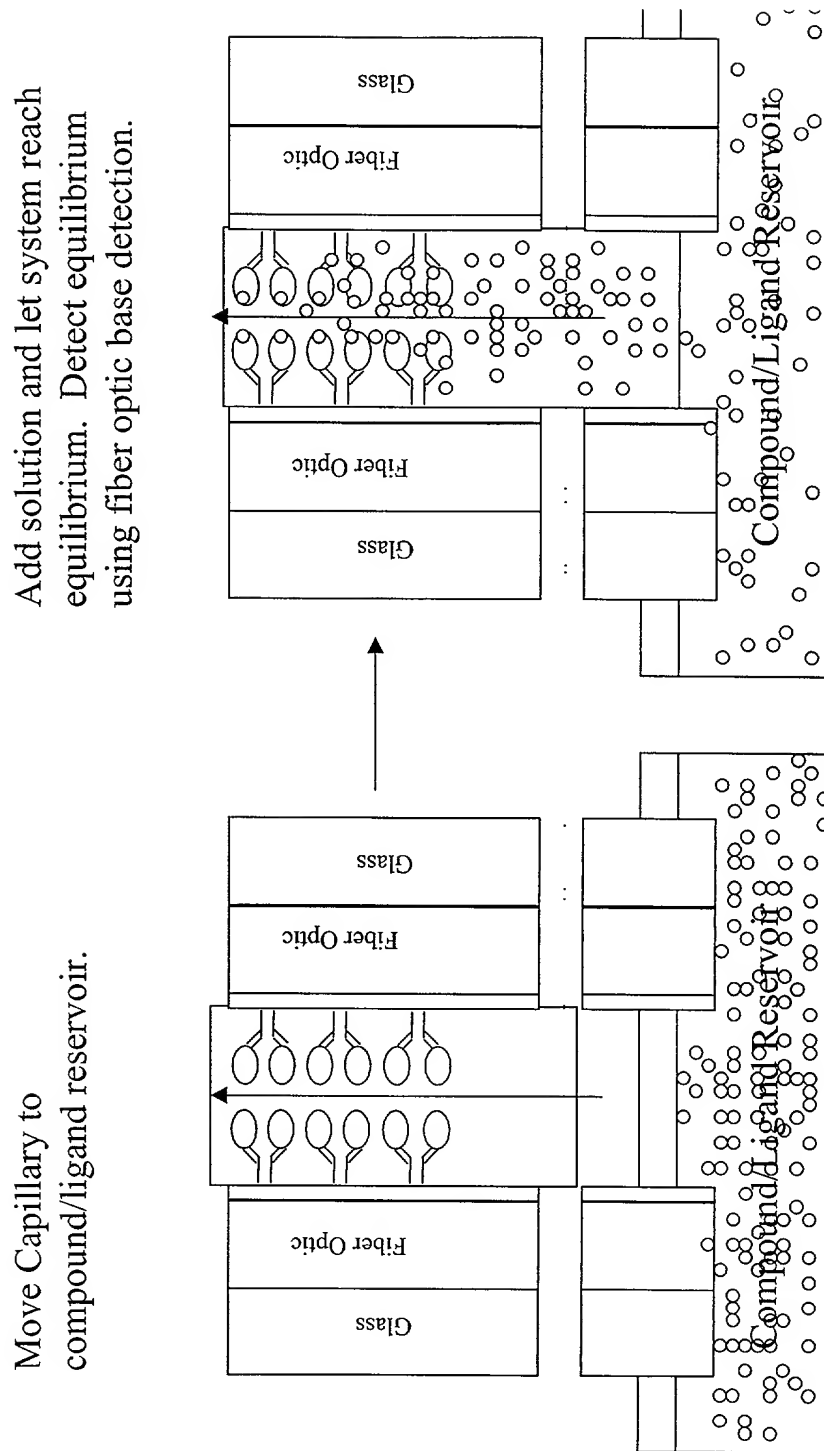


Figure 35 (cont . 2). Capillary Based Receptor Binding Assay: Equilibrium

Move capillary to a buffer reservoir and wash capillary with buffer. Detect % bound using fiber optic based detection.

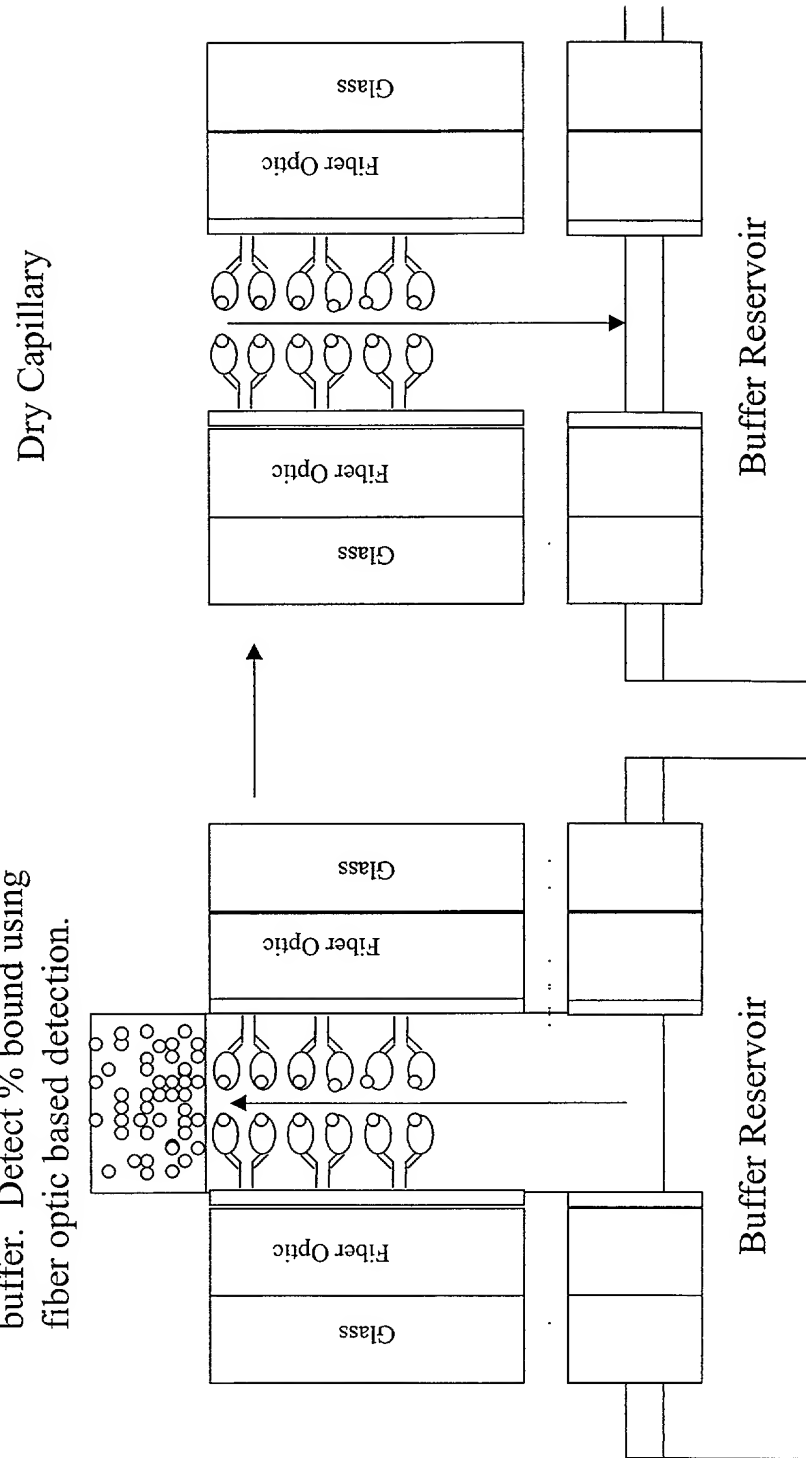
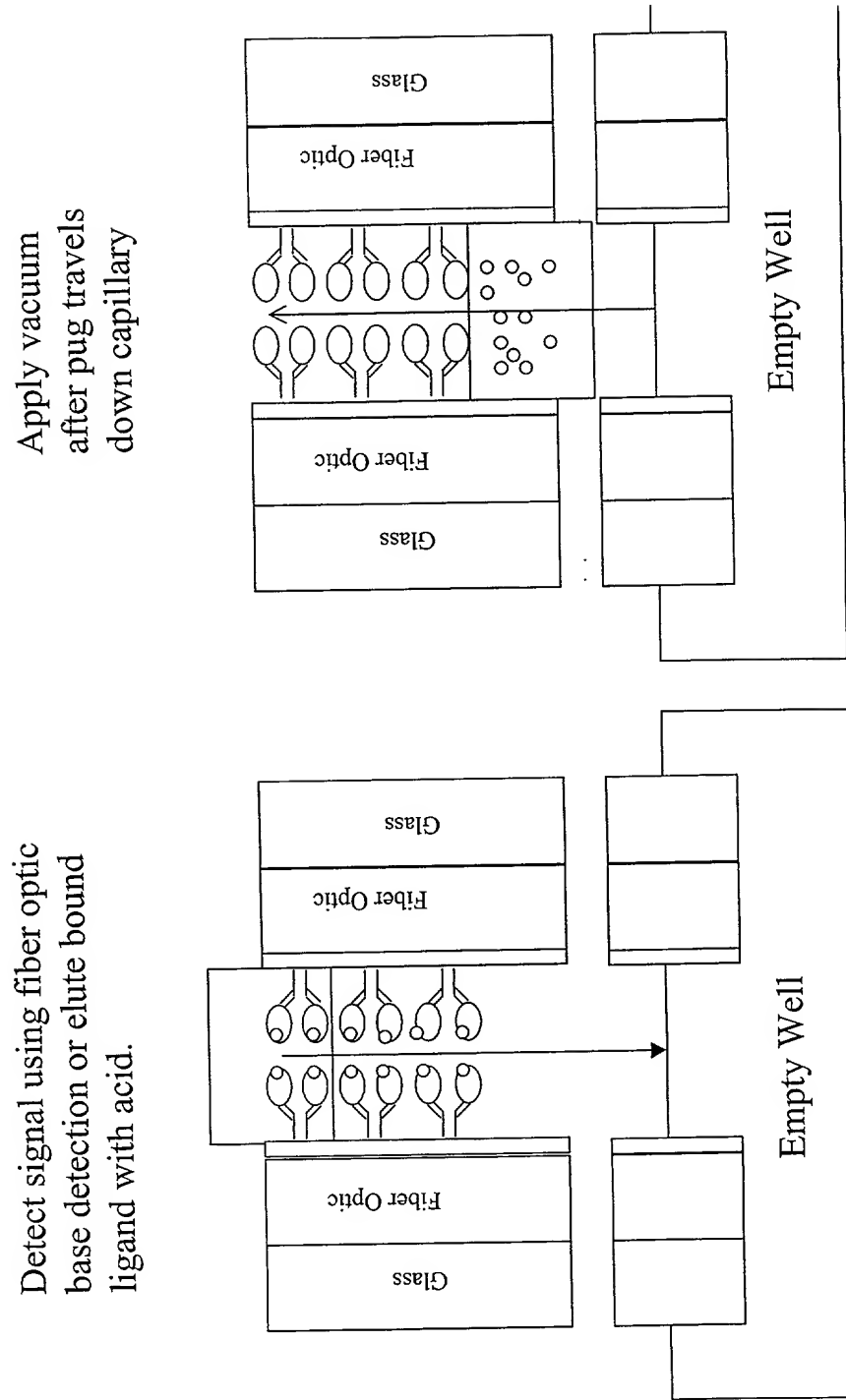
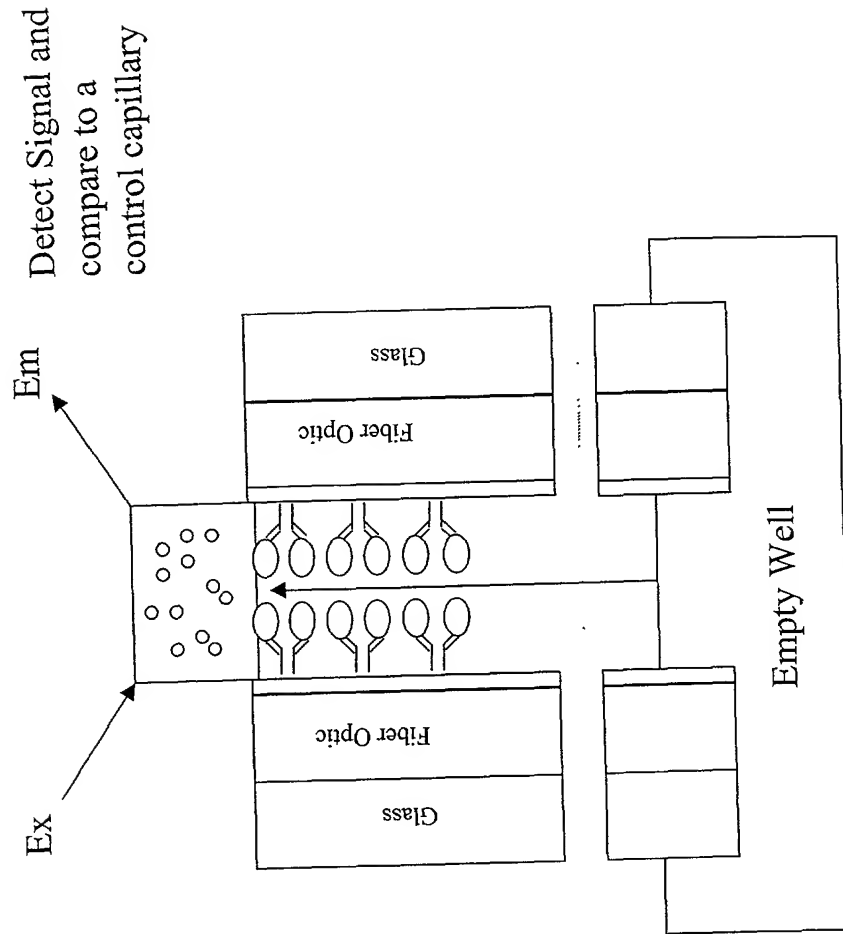


Figure 35 (cont . 3). Capillary Based Receptor Binding Assay: Equilibrium



**Figure 35 (cont . 4). Capillary Based Receptor Binding
Assay: Equilibrium**



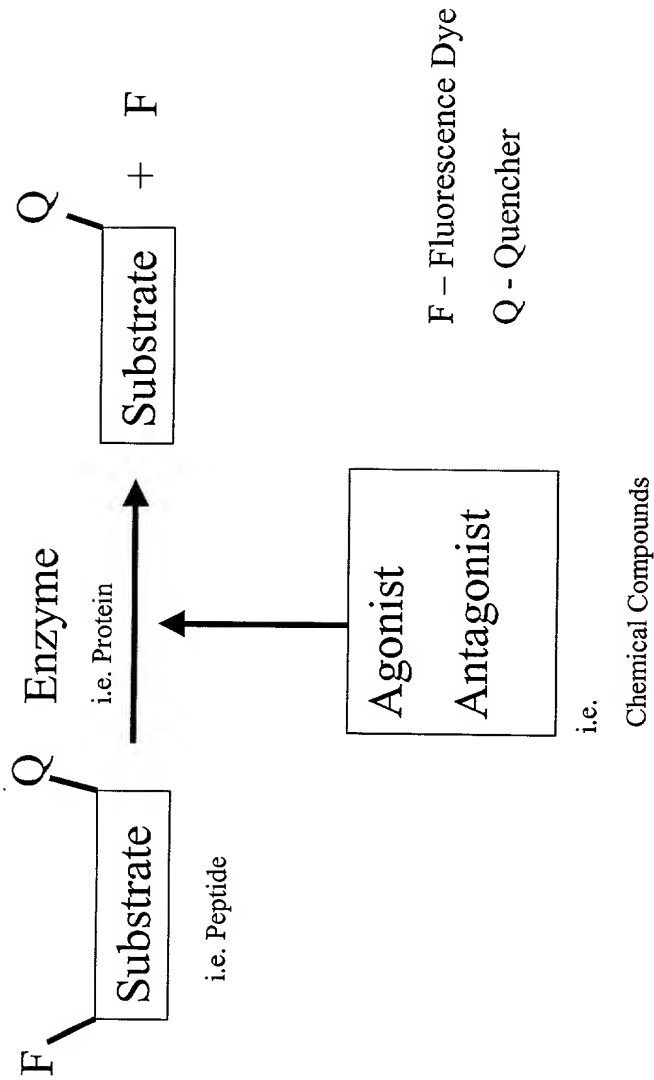
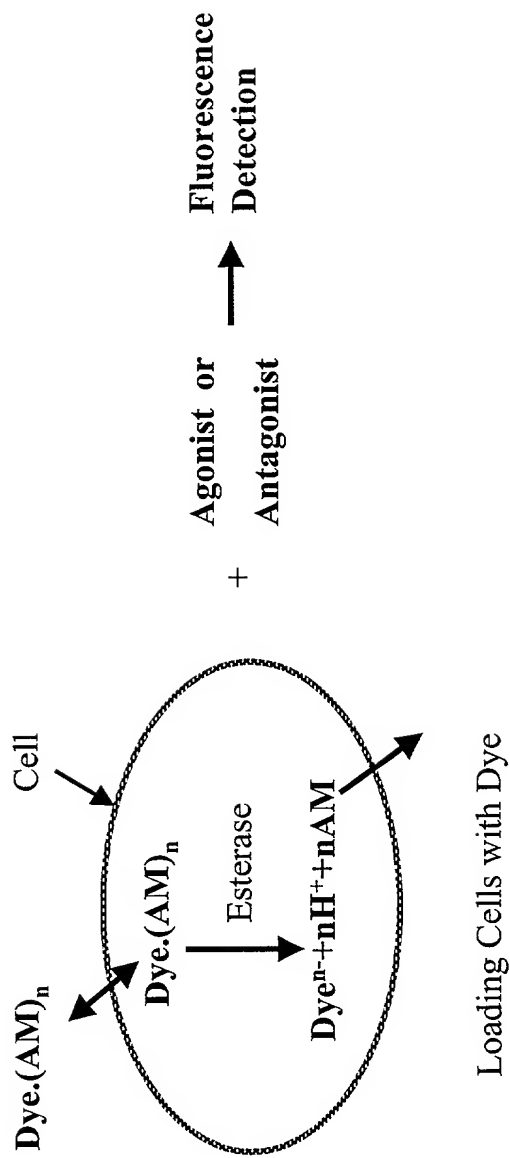


Figure 36



Assay Based on Tracking Cytosolic $[\text{Ca}^{++}]$

Figure 37

Protein Array & Cell Array

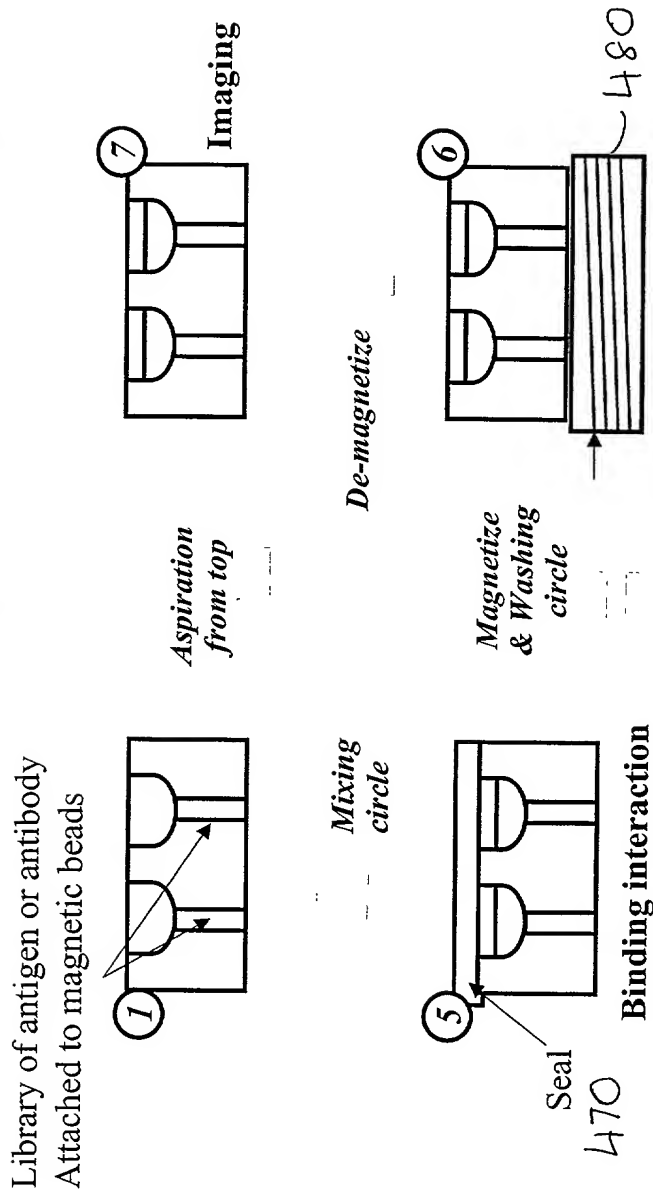


FIG. 38A

Fluid-Array™ XHTS

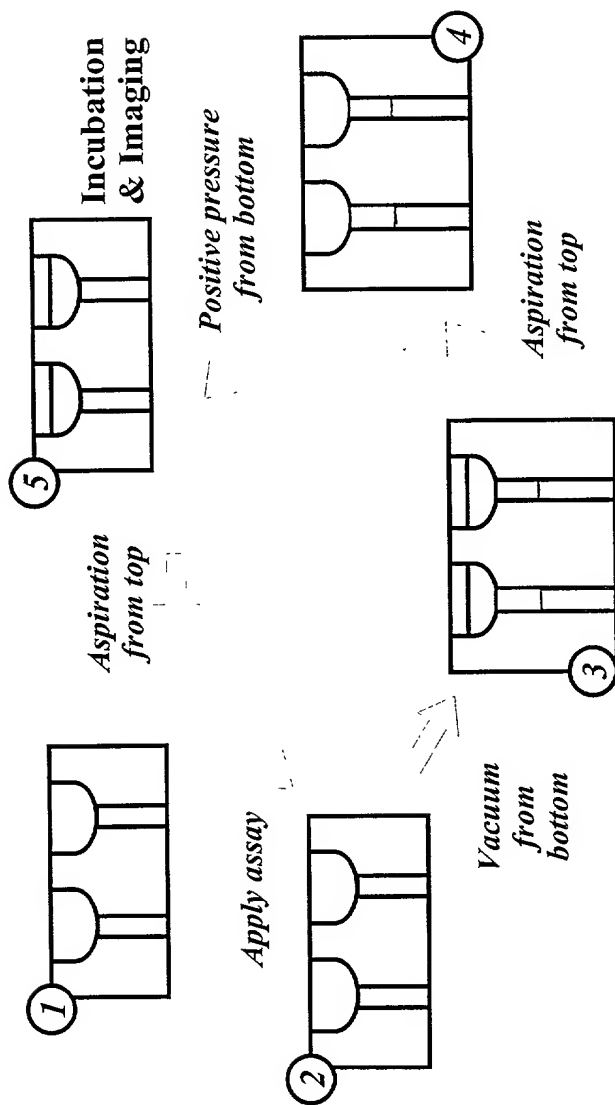
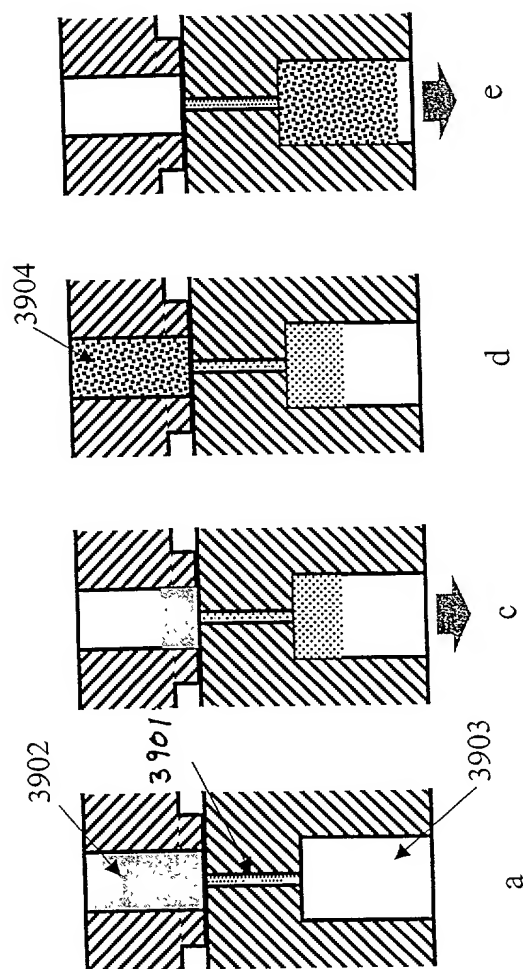


FIG. 3BB

Fig. 40 Metering with through hole plates and mixing



- 3901 – compound and compound storage chamber
- 3902 – reagent A (i.e. enzyme) in through hole plate A
- 3903 – mixing/reaction chamber
- 3904 – reagent B (i.e. substrate) in through hole plate B

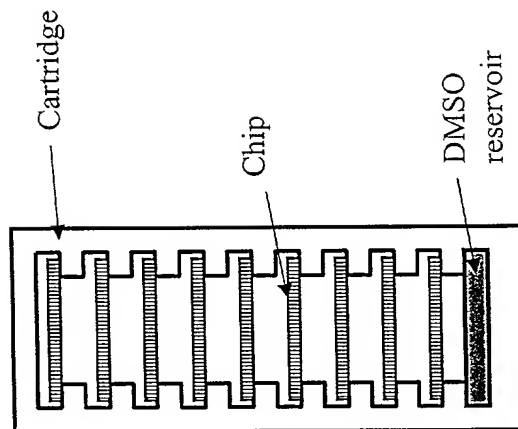


Fig. 39 One embodiment of the capillary array cartridge design

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